

3 1761 11708719 7

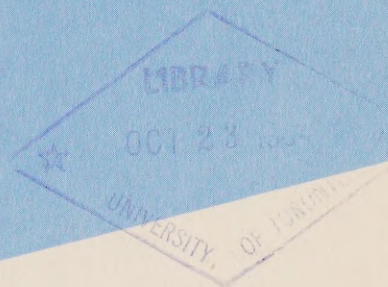


Digitized by the Internet Archive
in 2023 with funding from
University of Toronto

<https://archive.org/details/31761117087197>



11



669C

DATA RECORD

**SCOTIAN SHELF TO
TAIL OF GRAND BANKS**

No. 11-14
1964 Data Record Series

1964 11-14

Canadian Oceanographic Data Centre

**Programmed by the
Canadian Committee on Oceanography**

1964

GC

1

C35

1964

no. 11-14



1025200

ROGER DUHAMEL, F. R. S. C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

Cat. No. M58-1/1964-11

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

SCOTIAN SHELF TO TAIL OF GRAND BANKS

(C.O.D.C. Reference: 10-63-002)

No. 11

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA
and
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

SCOTIAN SHELF TO TAIL OF GRAND BANKS

Ship:	C. N. A. V. "SACKVILLE"
Local Cruise designation:	S-71
Cruise period:	April 16 - April 29, 1963
Observers:	Mr. G. B. Taylor
	Mr. C. J. Bayers
	Mr. T. A. Grant
	Mr. R. Cooper
	Mr. W. Webb

ATLANTIC OCEANOGRAPHIC GROUP
and
MARINE SCIENCES BRANCH

Bedford Institute of Oceanography, Dartmouth, N.S.

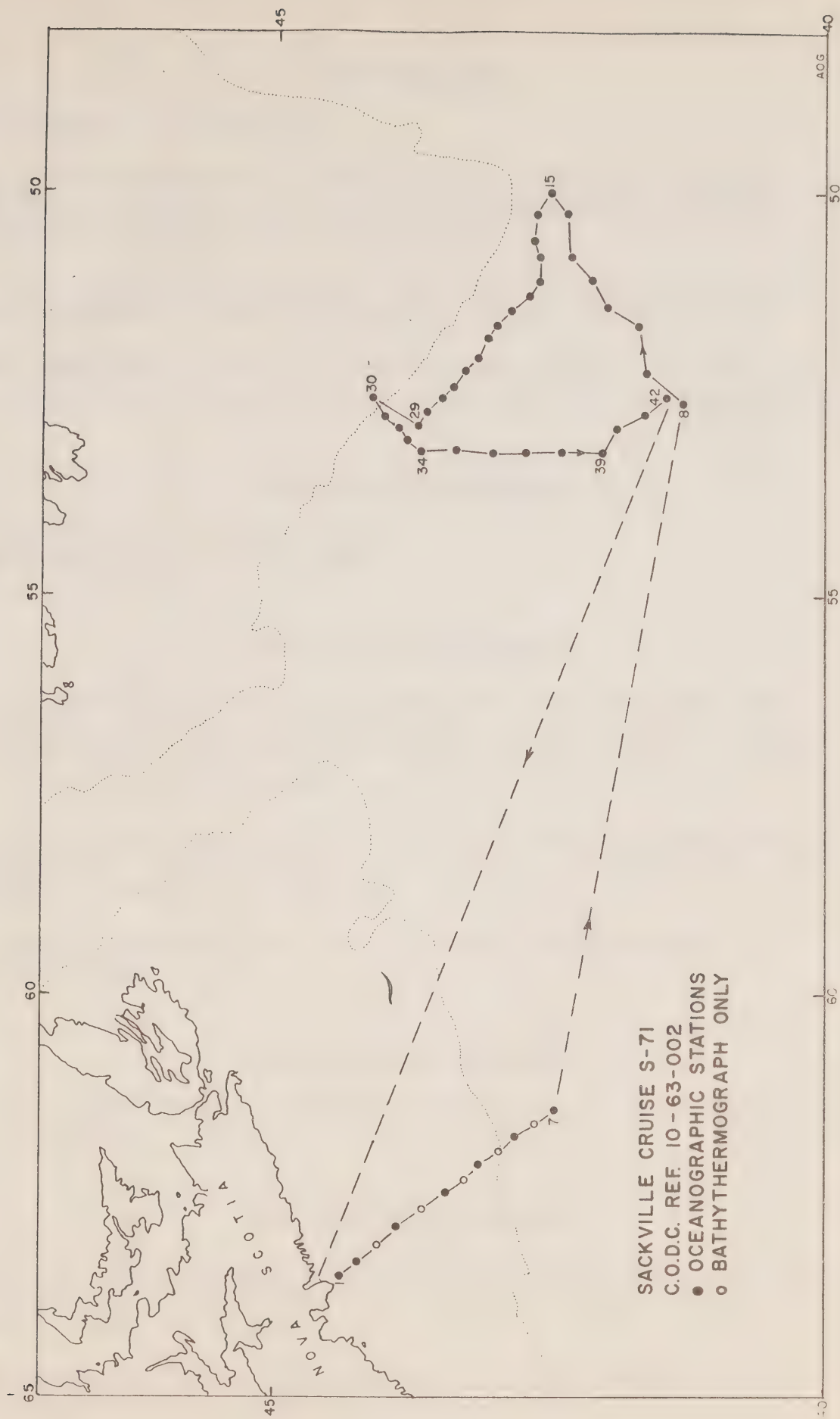
SECTION I

Description of data collection procedures

"SACKVILLE"



— Fisheries Research Board —



TRACK CHART

INTRODUCTION

The purposes of this cruise were:

- 1) To collect temperature and salinity data along the Halifax oceanographic section running south-east of Halifax for long term studies of environmental conditions on the Scotian Shelf (see track chart).
- 2) To collect temperature and salinity data in the deep water south and west of the Grand Banks for studies of the formation of Slope water in this area.

This cruise was run in conjunction with CSS Baffin Cruise 4. The Baffin operated to the East of the banks. (C.O.D.C. Data Record No. 10/1964 Series).

EXTRACT OF CRUISE LOG

Depart Halifax, N.S. 16 April 1963

Return Halifax, N.S. 29 April 1963

OBSERVATION PROCEDURES

- 1) 42 Oceanographic stations were occupied employing Knudsen water bottles and Richter and Wiese reversing thermometers. Observations were made at or near standard depths to depths of 2000 metres in two casts, 10-300 m and 400-2000 m. The deep cast was made first.
- 2) Surface water samples for surface temperature and salinity were obtained in a metal bucket. The temperature was measured with a mercury-in-glass thermometer graduated in 0.1°C intervals.
- 3) Weather observations were made at each station by ships' officers and scientific personnel.

LABORATORY PROCEDURES

Salinities were analysed on NIO conductivity bridge No. 3 at The Bedford Institute of Oceanography.

BATHYTHERMOGRAPH DATA

B.T. observations to a maximum depth of 275 metres were made on each station just prior to the first serial bottle cast. A surface temperature was obtained while the second cast was down.

Bathythermograph records were processed by the bathythermograph centre of the Bedford Institute of Oceanography.

PERSONNELAt Sea:

G. B. Taylor	Technician-in-Charge	AOG
C. J. Bayers		AOG
T. A. Grant		AOG
R. Cooper		BIO
W. Webb		DOT

Data Analyses:

Compilation of Data:	G. B. Taylor, T. R. Foote
Salinity Determinations:	M. MacLean, W. Young
B.T. Processing:	T. A. Grant, D. M. MacDonald

SECTION II

Description of the machine-generated data record

INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an **"estimate of precision"** for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a **standard deviation (σ)** can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under **"GENERAL INFORMATION"** of section II of the data record.

The **measurement error estimate** of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e., $1\sigma = A$, $2\sigma = B$, etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an **"interpolation error estimate"** derived from the particular interpolation formula used. There are two purposes in stating the error estimates; **first**, to give an indication of the quality of interpolated data; **second**, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O_2) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the **"measurement error estimate"** comprises the **"combined measurement and interpolation error estimate"**. It is expressed as a multiple of the standard deviation of measurement (σ) under normal routine field conditions by:

[illegible][illegible][illegible]

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2}, \text{ where}$$

σ_i = Standard deviation of the combined error estimates at standard oceanographic depth,

ΔV_i = the interpolation error estimate of variable "V" at standard oceanographic depth = $1/3 (V_{i_1} - V_{i_2})$

γ = Interpolation polynomial coefficient.

Z_j = Observed depth.

Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction $\frac{\sigma_i}{\sigma}$, if ≥ 2 , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.).

With respect to the interpolated value of the **salinity** variable if reported to three decimal digits, the **interpolation error estimate** is given only when $\frac{\sigma_i}{\sigma} \geq 2$ (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFERENCE NUMBER:

Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE NUMBER:

Indicates the chronological order in which the stations were occupied.

(3) LATITUDE:

Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the Master-card data were recorded.

It is reported to tenths of hours (Table 1).

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH:

The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM

SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).

00 m - 50 m = 00

51 m - 150 m = 01

151 m - 250 m = 02

etc.

- (12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).
- (14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;
- NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.
- (15) WAVES 1
($d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.
- (18) WIND FORCE (WND-FCE): Beaufort Notation (See Table 6).
- WIND SPEED (WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.
- (19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.
- (20) AIR TEMPERATURE: In degrees Celsius.
- (21) WET BULB: In degrees Celsius.
- (22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700
- (25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.
- (26) STATION: A station reference number, assigned by the institute prior to, or during the survey.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO_4	(9) -P-	(10) NO_2	(11) NO_3	(12) SiO_3
				(13) pH.	

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.

(3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01°C . Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section. An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) SALINITY: Salinity as defined by: $S = 0.03 + 1.805 \text{ C1\%}$, reported in:
a. 1/100 parts per 1000, or
b. 1/1000 parts per 1000.

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)

In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places. An alphabetical character following the value is the measurement error estimate as referred to under (3).

(6) SIGMA-T: The specific gravity anomaly as defined by: $(\text{Specific gravity} - 1) \times 10^3$ (e.g., σ_t reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO ₄	Phosphate – Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO ₂	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre – No dissolved nitrogen included –
(11) NO ₃	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO ₃	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.
- (2) TEMPERATURE: Interpolated value at standard depth, followed by the **combined measurement and interpolation error estimate** (see "INTRODUCTION" to section II of the data record).
- (3) SALINITY:
- A. The reported salinity values are observed to three decimal places.
 - (i) the interpolation error estimate is less than twice the standard deviation of measurement
 - the interpolated value is reported to three decimal places (e.g., 30.139).
 - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
 - the interpolated value is reported to two decimal places, and followed by the **interpolation error estimate** (e.g., 29.23C).
 - B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
 - the interpolated value is reported to two decimal places, and followed by the **combined measurement and interpolation error estimate** (e.g., 30.59B).
- (4) OXYGEN: Interpolated value at standard depth, followed by the **combined measurement and interpolation error estimate** (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND
VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^p \delta dp$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY: The Potential energy anomaly χ as defined by:

$$\chi = \frac{1}{g} \int_0^p p \delta dp = \int_0^z \rho p \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e.g., 116.44).

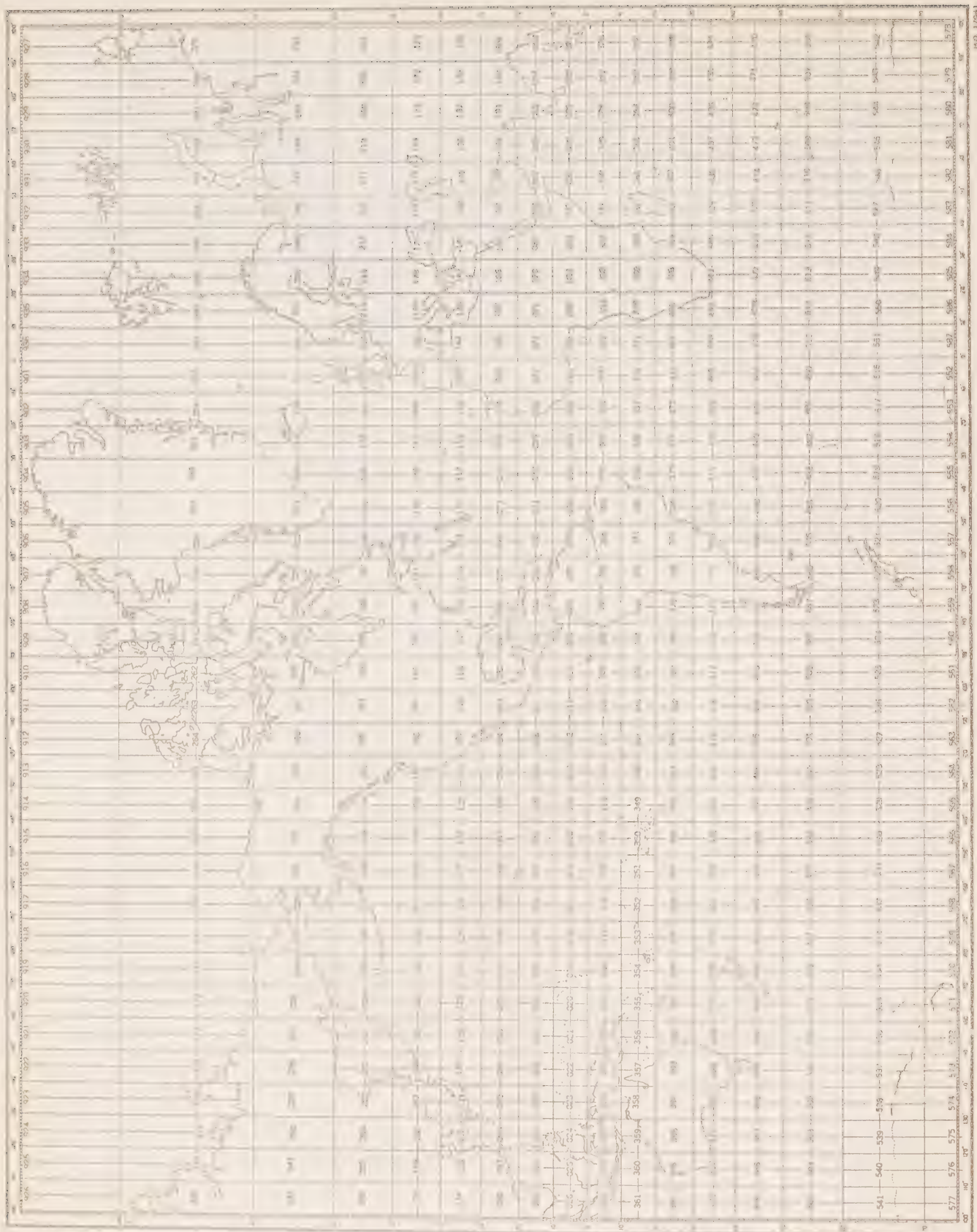
(9) SPECIFIC
VOLUME
ANOMALY: The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35.0.P}$$

δ is expressed in ml/gr, and conventionally reported as $10^5 \delta$, to one decimal place (i.e., δ reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

SPECIAL CHARACTERS

- ‡ (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs
- * (Asterisk): this character may occur in the **interpolated** portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one **observed depth interval**. The **third**, and all consequent levels within that interval are preceded by the asterisk to indicate that more than **two** machine interpolations were carried out, utilizing the same set of interpolation parabolas.



MARSDEN SQUARE CHART

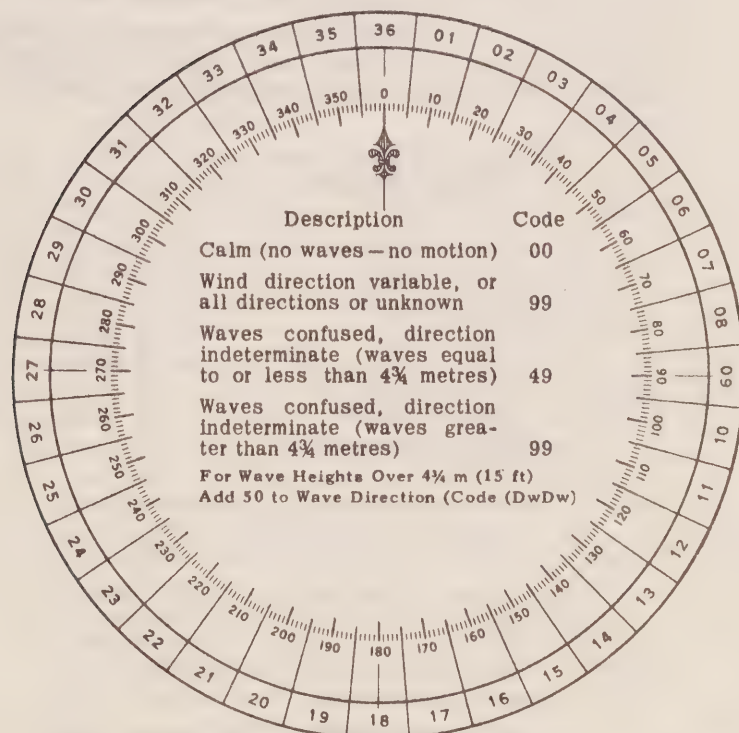
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)

(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure		ww	
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
	03	Clouds generally forming or developing	
Haze, dust, sand or smoke	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	} at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	

ww = 20 - 29	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	
20	Drizzle (not freezing) or snow grains	} not falling as shower(s)
21	Rain (not freezing)	
22	Snow	
23	Rain and snow or ice pellets, type (a)	
24	Freezing drizzle or freezing rain	
25	Shower(s) of rain	
26	Shower(s) of snow, or of rain and snow	
27	Shower(s) of hail, or of rain and hail	
28	Fog or ice fog	
29	Thunderstorm (with or without precipitation)	
ww = 30 - 39	Duststorm, sandstorm, drifting or blowing snow	
30	Slight or moderate duststorm or sandstorm	- has decreased during the preceding hour
31		- no appreciable change during the preceding hour
32		- has begun or has increased during the preceding hour
33	Severe duststorm or sandstorm	- has decreased during the preceding hour
34		- no appreciable change during the preceding hour
35		- has begun or has increased during the preceding hour
36	Slight or moderate blowing snow	} generally low (below eye level)
37	Heavy drifting snow	
38	Slight or moderate blowing snow	} generally high (above eye level)
39	Heavy blowing snow	
ww = 40 - 49	Fog or ice fog at the time of observation	
40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
41	Fog or ice fog in patches	
42	Fog or ice fog, sky visible	} has become thinner during the preceding hour
43	Fog or ice fog, sky invisible	
44	Fog or ice fog, sky visible	} no appreciable change during the preceding hour
45	Fog or ice fog, sky invisible	
46	Fog or ice fog, sky visible	} has begun or has become thicker during the preceding hour
47	Fog or ice fog, sky invisible	
48	Fog, depositing rime, sky visible	
49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| ww | | | |
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain | { | - slight |
| 88 | or rain and snow mixed | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | { | thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | { | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | { | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, dust storm, sand storm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{3}{4}$ n.m.)
94	1-2 km (approx. $\frac{3}{4}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

<u>Institute:</u>	Bedford Institute of Oceanography
<u>Observation platform:</u>	C. N. A. V. "Sackville"
<u>Vessel's cruising speed:</u>	11 knots
<u>Total number of stations occupied:</u>	42
<u>Anemometer height above sea level:</u>	11 metres
<u>Barometer readings:</u>	obtained using an Aneroid Barometer and were corrected prior to recording
<u>Air temperature</u>	observed from a Sling Psychrometer
<u>Wet bulb temperature</u>	observed from a Sling Psychrometer
<u>Surface Sea water temperature</u>	obtained from a bucket sample using a mercury-in-glass thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature:	0.02
Salinity:	0.004

SECTION III

Serial oceanographic data

C-REF-NO 002	YR 1963	DEPTH 90	WAVES 1 24X1	AIR T 05.2	VIS
CONS. NO 001	MONTH 4	MXSAMPD 01	WAVES 2 XX	WET B 04.3	STN
LAT 44-240N	DAY 16	NO.DPTH 6	WND-DIR 240	WW-CODE 02	
LON 63-282W	HR 22.8	W-COLOR	WND-SPD 02	CLD-TPE 7	
MARSD SQ 151		W-TRNSP	BARO 1018.5	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
228	0000	015	31455		2519	14512
228	0010	-0033	31439		2527	14430
228	0020	-0011	31472		2529	14442
228	0030	-0022	31476		2530	14439
228	0050	-0033	31482		2531	14437
228	0075	-0008	31613		2540	14455

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0150	31455		2519	14512	0000	00000	2783
0010	-0033	31439		2527	14430	0028	00001	2707
0020	-0011	31472		2529	14442	0055	00006	2690
0030	-0022	31476		2530	14439	0082	00012	2682
0050	-0033	31482		2531	14437	0136	00035	2672
0075	-0008	31613		2540	14455	0202	00077	2580

C-REF-NO 002	YR 1963	DEPTH 155	WAVES 1 00X1	AIR T 00.3	VIS
CONS. NO 002	MONTH 4	MXSAMPD 01	WAVES 2 00X0	WET B 00.2	STN
LAT 44-158N	DAY 17	NO.DPTH 8	WND-DIR 990	WW-CODE 01	
LUN 63-189W	HR 00.2	W-COLOR	WND-SPD 02	CLD-TPE 6	
MARSD SQ 151		W-TRNSP	BARO 1001.9	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
002	0000	010	31357		2514	14488
002	0006	0082	31347		2515	14481
002	0016	-0049	31436		2528	14423
002	0026	-0062	31556		2538	14421
002	0046	-0035	31791		2556	14440
002	0071	0023	31933		2565	14473
002	0096	0058	32074		2574	14495
002	0146	0277	32856		2622	14611

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0100	31357		2514	14488	0000	00000	2830
0010	0030 E	31373		2519	14458	0028	00001	2783
0020	-0062 B	31482		2532	14418	0056	00006	2663
0030	-0060	31608		2542	14423	0082	00012	2567
0050	-0026	31819		2558	14445	0132	00033	2416
0075	0028	31950		2566	14476	0192	00071	2338
0100	0089 F	3216 G		2579	14510	0249	00122	2210
0125	0182 D	3250 E		2600	14561	0302	00183	2014
*0150	0297 B	3293 B		2626	14621	0350	00250	1773

C-REF-NO 002	YR 1963	DEPTH 271	WAVES 1 00X1	AIR T 03.5	VIS
CONS. NO 003	MONTH 4	MXSAMPD 02	WAVES 2 00X0	WET 8 02.8	STN
LAT 43-535N	DAY 17	NO.DPTH 10	WND-DIR 360	WW-CODE 02	
LON 62-532W	HR 03.5	W-COLOR	WND-SPD 02	CLD-TPE	
MARSD SQ 151		W-TRNSP	BARO 1002.0	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
035	0000	025	31918		2549	14562
035	0010	0235	31906		2549	14557
035	0020	0187	31919		2554	14538
035	0030	0169	31933		2556	14532
035	0050	-0035	32351		2601	14448
035	0075	0440	33375		2648	14676
035	0100	0590	33992		2679	14750
035	0150	0723	34549		2705	14818
035	0200	0746	34689		2713	14837
035	0250	0729	34713		2717	14839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0250	31918		2549	14562	0000	00000	2498
0010	0235	31906		2549	14557	0025	00001	2497
0020	0187	31919		2554	14538	0050	00005	2454
0030	0169	31933		2556	14532	0075	00011	2431
0050	-0035	32351		2601	14448	0119	00029	2006
0075	0440	33375		2648	14676	0164	00057	1570
0100	0590	33992		2679	14750	0200	00089	1278
0125	0677 C	3435 E		2696	14794	0230	00124	1122
0150	0723	34549		2705	14818	0258	00162	1042
0175	0744 B	3465 C		2710	14832	0283	00205	0998
0200	0746	34689		2713	14837	0308	00253	0978
0225	0753 C	3476 E		2718	14845	0332	00306	0939
0250	0729	34713		2717	14839	0356	00364	0945

C-REF-NO 002	YR 1963	DEPTH	84	WAVES 1 00X1	AIR T 03.2	VIS 90
CONS. NO 004	MONTH 4	MXSAMPD	01	WAVES 2 00X0	WET B 02.6	STN
LAT 43-293N	DAY 17	NO.DPTH	6	WND-DIR 050	WW-CODE 02	
LON 62-270W	HR 06.8	W-COLOR		WND-SPD 03	CLD-TPE	
MARSD SQ 151		W-TRNSP		BARO 1002.0	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
068	0000	028	32126		2563	14578
068	0010	0286	32104		2561	14582
068	0020	0233	32124		2567	14561
068	0030	0227	32128		2568	14560
068	0050	0223	32142		2569	14562
068	0075	0353	32899		2618	14633

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0280	32126		2563	14578	0000	00000	2364
0010	0286	32104		2561	14582	0024	00001	2385
0020	0233	32124		2567	14561	0048	00005	2330
0030	0227	32128		2568	14560	0071	00011	2323
0050	0223	32142		2569	14562	0118	00030	2310
0075	0353	32899		2618	14633	0170	00063	1845

C-REF-NO 002	YR 1963	DEPTH	91	WAVES 1 34X2	AIR T 00.2	VIS
CONS. NO 005	MONTH 4	MXSAMPD	01	WAVES 2 00X0	WET B 00.3	STN
LAT 43-110N	DAY 17	NO.DPTH	7	WND-DIR 340	WW-CODE 03	
LON 62-060W	HR 09.3	W-COLOR		WND-SPD 02	CLD-TPE 7	
MARSD SQ 151		W-TRNSP		BARO 1002.1	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
093	0000	032	32635		2601	14603
093	0010	0330	32619		2598	14608
093	0020	0342	32718		2605	14616
093	0030	0347	32749		2607	14621
093	0050	0460	33091		2623	14676
093	0075	0760	34313		2681	14817
093	0085	0798	34422		2684	14835

*DRY BULB LESS THAN WET BULB TEMPERATURE

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0320	32635		2601	14603	0000	00000	2011
0010	0330	32619		2598	14608	0020	00001	2032
0020	0342	32718		2605	14616	0040	00004	1968
0030	0347	32749		2607	14621	0060	00009	1950
0050	0460	33091		2623	14676	0098	00025	1802
0075	0760	34313		2681	14817	0136	00048	1256

C-REF-NO 002 YR 1963 DEPTH 1006 WAVES 1 36X1 AIR T 00.3 VIS 90
 CONS. NO 006 MONTH 4 MXSAMPD 09 WAVES 2 00X0 WET B 00.2 STN
 LAT 42-510N DAY 17 NO.DPTH 17 WND-DIR 350 WW-CODE 02
 LON 61-445W HR 12.3 W-COLOR WND-SPD 05 CLD-TPE 6
 MARSD SQ 151 W-TRNSP BARO 1002.2 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
134	0000	029	32516		2594	14588
134	0010	0288	32499		2592	14589
134	0020	0277	32491		2593	14585
134	0030	0241	32493		2596	14571
134	0050	0216	32707		2615	14567
134	0074	0328	33159		2641	14625
134	0099	0695	33983		2665	14791
134	0149	0937	34885		2699	14904
128	0196	0606	34555		2721	14780
128	0245	0577	34660		2733	14777
128	0294	0514	34754		2749	14761
128	0393	0434	34765		2758	14744
128	0492	0450	34862		2764	14769
123	0590	0444	34907		2769	14783
123	0688	0418	34907		2771	14788
123	0786	0413	34932		2774	14803
123	0885	0398	34856		2770	14812

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0290	32516		2594	14588	0000	00000	2076
0010	0288	32499		2592	14589	0021	00001	2088
0020	0277	32491		2593	14585	0042	00004	2086
0030	0241	32493		2596	14571	0063	00010	2057
0050	0216	32707		2615	14566	0102	00026	1877
0075	0342 B	33191		2643	14632	0146	00053	1615
0100	0706	34012		2665	14796	0184	00087	1410
0125	0900	3460 C		2682	14882	0218	00126	1261
0150	0931 B	3488 B		2699	14902	0248	00168	1103
0175	0769 I	3475 I		2714	14843	0274	00211	0963
0200	0598 B	3456 B		2722	14777	0297	00256	0881
0225	0571 G	3459 E		2729	14771	0319	00303	0825
0250	0571	34671		2735	14776	0339	00351	0768
0300	0507	34757		2750	14759	0374	00450	0633
0400	0434	34771		2759	14746	0434	00663	0550
0500	0450	34867		2765	14770	0487	00909	0507
0600	0441	34907		2769	14784	0537	01190	0478
0700	0417	34912		2772	14790	0584	01505	0456
0800	0406 B	3491 C		2773	14802	0630	01861	0458

C-REF-NO 002	YR 1963	DEPTH 914	WAVES 1 36X2	AIR T 04.0	VIS
CONS. NO 007	MONTH 4	MXSAMPD 06	WAVES 2 XX	WET B 03.6	STN
LAT 42-320N	DAY 17	NO.DPTH 14	WND-DIR 360	WW-CODE 02	
LON 61-240W	HR 16.1	W-COLOR	WND-SPD 04	CLD-TPE 6	
MARSD SQ 151		W-TRNSP	BARO 1002.2	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
165	0000	041	32891		2612	14644
165	0010	0339	32864		2617	14616
165	0020	0333	32966		2626	14616
165	0030	0345	33057		2632	14624
165	0050	0391	33219		2640	14649
165	0075	0680	34024		2670	14782
165	0099	0882	34760		2698	14873
161	0144	0863	34931		2714	14876
161	0191	0853	35045		2725	14881
161	0239	0575	35005		2761	14780
161	0287	0589	34842		2746	14791
161	0383	0616	35017		2757	14820
161	0478	0505	35012		2770	14791
161	0575	0496	34984		2769	14803

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SWA
0000	0410	32891		2612	14644	0000	00000	1899
0010	0339	32864		2617	14616	0019	00001	1855
0020	0333	32966		2626	14616	0037	00004	1773
0030	0345	33057		2632	14624	0055	00008	1716
0050	0391	33219		2640	14649	0088	00022	1637
0075	0680	34024		2670	14782	0126	00046	1363
0100	0884	3477 B		2699	14875	0157	00073	1101
0125	0902 I	3496 I		2710	14888	0184	00104	0995
0150	0869 C	34952		2715	14879	0208	00138	0954
0175	0870 E	35018		2720	14885	0232	00177	0912
0200	0800 G	35048		2733	14863	0253	00219	0789
0225	0655 I	35031		2753	14810	0271	00257	0604
0250	0565 D	3497 B		2759	14777	0285	00292	0541
0300	0597 B	3485 D		2746	14797	0316	00379	0673
0400	0597 C	35023		2760	14816	0378	00600	0560
0500	0536 I	3504 D		2768	14808	0431	00843	0486

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 10X2	AIR T 04.9	VIS
CONS. NO 008	MONTH 4	MXSAMPD 14	WAVES 2 XX	WET B 03.9	STN	
LAT 41-220N	DAY 19	NO.DPTH 18	WND-DIR 110	WW-CODE 03		
LON 52-385W	HR 10.4	W-COLOR	WND-SPD 07	CLD-TPE 4		
MARSD SQ 150		W-TRNSP	BARU 1001.5	CLD-AMT 6	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
120	0000	042	33165		2633	14652
120	0010	0421	33131		2630	14654
120	0019	0415	33136		2631	14653
120	0029	0412	33134		2631	14653
120	0049	0405	33145		2633	14654
120	0073	0650	33835		2659	14767
120	0098	0911	34735		2691	14884
120	0146	0710	34649		2715	14814
120	0195	0668	34772		2730	14807
104	0230	0359	34708		2762	14685
120	0292	0437	34677		2751	14728
104	0300	0445	34921		2770	14736
104	0390	0436	34953		2773	14747
104	0540	0416	35029		2781	14765
104	0740	0395	34911		2774	14787
104	0926	0377	34921		2777	14811
104	1091	0377	34927		2777	14839
104	1440	0371				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0420	33165		2633	14652	0000	00000	1702
0010	0421	33131		2630	14654	0017	00001	1729
0020	0415	33136		2631	14653	0035	00004	1720
0030	0409	33128		2631	14652	0052	00008	1722
0050	0412	33165		2634	14657	0086	00022	1699
0075	0675 B	3392 C		2662	14779	0126	00047	1438
0100	0910 D	3475 D		2693	14884	0159	00076	1155
0125	0845 I	3482 I		2708	14865	0186	00107	1010
0150	0712 D	3466 B		2715	14815	0211	00142	0944
0175	0703 I	3472 E		2722	14817	0234	00180	0888
0200	0623 E	34766		2736	14790	0254	00220	0756
0225	0402 E	34720		2758	14703	0271	00255	0536
0250	0391	3473 I		2760	14702	0284	00288	0517
0300	0445	34921		2770	14736	0308	00355	0440
0400	0435	34960		2774	14748	0351	00509	0410
0500	0421	3501 B		2780	14760	0390	00689	0365
0600	0409	3500 C		2780	14772	0427	00900	0372
0700	0399	3494 C		2776	14783	0467	01167	0415
0800	0388	34908		2775	14795	0510	01499	0435

DEPTH	T E M P	S A L	OXYGEN	SGMT	SDUND	DELTA-D	POT.EN	SVA
1000	0376	3491 B		2776	14823	0599	02319	0439
1200	0370 B							

C-REF-NO 002	YR 1963	DEPTH	WAVES 1 10X2	AIR T 05.3	VIS
CONS. NO 009	MONTH 4	MXSAMPD 19	WAVES 2 XX	WET B 05.2	STN
LAT 41-410N	DAY 19	NO.DPTH 18	WND-DIR 110	WW-CODE 02	
LON 52-110W	HR 18.2	W-COLOR	WND-SPD 03	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 1001.2	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	053	33241		2627	14699
193	0012	0523	33210		2625	14698
193	0023	0589	33549		2644	14731
193	0035	0640	33850		2662	14757
193	0059	0601	33981		2677	14747
193	0084	0211	33730		2697	14584
193	0115	0293	34147		2723	14630
193	0173	0370	34495		2744	14678
193	0229	0357	34776		2767	14685
193	0346	0464	34873		2764	14751
182	0382	0459	34874		2764	14754
182	0479	0442	34927		2770	14764
182	0545	0429	34936		2773	14770
182	0768	0393	34937		2776	14792
182	0954	0390	34961		2779	14822
182	1192	0389	34999		2782	14862
182	1420	0377	34970		2781	14894
182	1885	0344	34959		2783	14959

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0530	33241		2627	14699	0000	00000	1759
0010	0535 E	3327 I		2628	14703	0018	00001	1748
0020	0568 B	3344 D		2638	14721	0035	00004	1654
0030	0623	33738		2655	14748	0051	00008	1498
0050	0646 C	3399 C		2672	14764	0079	00019	1342
0075	0348 I	3381 I		2692	14643	0111	00039	1152
0100	0216 I	3391 I		2710	14591	0137	00063	0971
0125	0313	3423 C		2728	14642	0160	00088	0810
0150	0351	3439 E		2738	14664	0179	00116	0723
0175	0370	34507		2745	14678	0197	00145	0659
0200	0366 C	34643		2756	14683	0212	00174	0555
*0225	0359	34759		2766	14685	0225	00202	0462
0250	0376 E	3482 C		2769	14697	0236	00229	0435
0300	0422 G	3488 E		2769	14726	0258	00292	0443
0400	0456	34883		2765	14756	0305	00463	0492
0500	0438	34931		2771	14766	0353	00681	0445
0600	0418	34937		2774	14774	0397	00930	0428
0700	0401	34937		2776	14784	0440	01217	0419
0800	0392	34940		2777	14796	0482	01542	0415

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0390	34971		2779	14830	0565	02315	0409
1200	0389	34998		2782	14863	0648	03250	0405
1500	0375	3499 C		2783	14907	0774	05004	0421

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 12X3	AIR T 09.5	VIS
CUNS. NO 010	MONTH 4	MXSAMPD 18		WAVES 2 15X5	WET B 09.0	STN
LAT 41-450N	DAY 19	NO.DPTH 18		WND-DIR 120	WW-CODE 02	
LON 51-395W	HR 22.0	W-COLOR		WND-SPD 05	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO 1009.5	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
231	0000	092	34448		2667	14867
231	0010	0915	34403		2665	14867
231	0020	0914	34401		2665	14868
231	0031	0911	34417		2666	14869
231	0053	0882	34391		2669	14861
231	0078	1012	34787		2678	14918
231	0103	1121	35090		2683	14965
231	0157	1182	35356		2692	14999
231	0207	1050	35291		2711	14960
231	0313	0744	35004		2738	14859
220	0372	0566	34887		2753	14797
220	0455	0545	34982		2763	14803
220	0530	0549	35044		2767	14818
220	0711	0468	35010		2774	14814
220	0880	0427	34987		2777	14825
220	1110	0397	34967		2778	14851
220	1310	0385	34974		2780	14879
220	1805	0352	34961		2783	14949

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0920	34448		2667	14867	0000	00000	1376
0010	0915	34403		2665	14867	0014	00001	1404
0020	0914	34401		2665	14868	0028	00003	1406
0030	0911	34416		2666	14869	0042	00007	1393
0050	0883 B	3439 B		2669	14861	0070	00018	1375
0075	0992 B	3473 C		2677	14910	0104	00039	1298
0100	1110	35059		2682	14960	0136	00068	1259
0125	1173	3525 B		2685	14989	0167	00105	1237
0150	1187	35346		2690	14999	0198	00148	1199
0175	1145 C	3535 C		2698	14989	0227	00197	1125
0200	1074 B	3531 B		2708	14967	0255	00249	1036
0225	1000	3525 B		2716	14944	0280	00304	0963
0250	0929	3518 C		2723	14921	0303	00361	0900
*0300	0783	3504 B		2735	14873	0346	00481	0787
0400	0542 E	3490 C		2757	14792	0415	00723	0579
0500	0547	35023		2766	14812	0470	00976	0509
0600	0523 C	3505 C		2771	14819	0520	01256	0475
0700	0474	35016		2774	14815	0566	01567	0448

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0443	34997		2776	14819	0611	01912	0435
1000	0408	34974		2778	14837	0698	02721	0429
1200	0391	34969		2779	14863	0785	03708	0430
1500	0367	3496 B		2781	14904	0916	05531	0431

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 19X3	AIR T 10.5	VIS
CONS. NO 011	MONTH 4	MXSAMPD	22	WAVES 2 16X5	WET B 10.0	STN
LAT 42-030N	DAY 20	NO.DPTH	18	WND-DIR 200	WW-CODE 02	
LOX 51-260W	HR 10.8	W-COLOR		WND-SPD 05	CLD-TPE 7	
MARSD SQ 150		W-TRNSP		BARO 1000.8	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
118	0000	090	34516		2676	14861
118	0010	0917	34490		2671	14868
118	0020	0911	34475		2671	14868
118	0032	0938	34565		2674	14881
118	0053	1065	34939		2681	14935
118	0079	1110	35131		2688	14958
118	0104	1160	35226		2686	14981
118	0158	1195	35377		2691	15004
118	0209	1050	35290		2711	14960
118	0316	0804				
108	0477	0507	34939		2764	14791
108	0578	0521	35045		2771	14815
108	0677	0484	35038		2775	14816
108	0900	0435	35025		2779	14832
108	1105	0402	34977		2779	14852
108	1370	0371	34973		2782	14883
108	1628	0359	34965		2782	14922
108	2157	0341	34961		2784	15004

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0900	34516		2676	14861	0000	00000	1295
0010	0917	34490		2671	14868	0013	00001	1342
0020	0911	34475		2671	14868	0027	00003	1346
0030	0931	34543		2673	14878	0040	00006	1329
0050	1046 B	3488 C		2680	14927	0066	00017	1268
0075	1107 B	35114		2687	14956	0098	00037	1207
0100	1152	35214		2686	14977	0128	00064	1221
0125	1191 B	3530 B		2686	14996	0159	00100	1231
0150	1199	35365		2689	15004	0190	00143	1208
0175	1155 D	3536 B		2697	14992	0219	00193	1137
0200	1081 B	3531 B		2707	14970	0247	00245	1046
0225	1009	3538 I		2725	14949	0271	00298	0879
0250	0949	3538 I		2736	14931	0292	00349	0782
*0300	0837	3536 I		2752	14897	0328	00449	0635
0400	0619 F	3518 I		2769	14827	0384	00645	0469
0500	0506 C	3496 B		2766	14794	0433	00873	0503
0600	0515	35048		2772	14816	0481	01148	0462
0700	0478	35038		2775	14817	0527	01451	0436

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0800	0453	35033		2778	14823	0570	01785	0420
1000	0418	35001		2779	14842	0655	02573	0420
1200	0389	34972		2780	14863	0741	03545	0425
1500	0364	34969		2782	14902	0870	05337	0422
2000	0342	34962		2784	14978	1088	09285	0437

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 27X3	AIR T 04.8	VIS
CONS. NO 012	MONTH 4	MXSAMPD	17	WAVES 2 18X5	WET B 04.7	STN
LAT 42-120N	DAY 20	NO.DPTH	18	WND-DIR 290	WW-CODE	
LON 51-050W	HR 14.1	W-COLOR		WND-SPD 06	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO 1000.8	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
152	0000	053	33046		2612	14696
152	0008	0532	33363		2636	14703
152	0016	0558	33506		2645	14717
152	0026	0590	33577		2646	14732
152	0043	0618	33881		2667	14750
152	0064	0750	34677		2711	14816
152	0084	0759	34602		2704	14822
152	0128	0791	34948		2727	14846
152	0169	0525	34599		2735	14743
152	0256	0489	34860		2760	14746
141	0394	0533	34977		2764	14788
141	0478	0464	34953		2770	14773
141	0570	0392	34886		2773	14758
141	0759	0380	34906		2775	14784
141	0930	0372	34906		2776	14809
141	1125	0367				
141	1305	0361	34908		2777	14867
141	1706	0356				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0530	33046		2612	14696	0000	00000	1905
0010	0537	33410		2640	14706	0018	00001	1641
0020	0572	3354 B		2645	14723	0034	00003	1587
0030	0595 B	33624		2649	14735	0050	00007	1550
0050	0663 D	3417 I		2684	14773	0078	00019	1229
0075	0762 C	3468 I		2710	14823	0106	00036	0988
0100	0789 G	3473 I		2710	14838	0131	00058	0990
0125	0794 B	3493 D		2724	14846	0154	00085	0858
0150	0656 I	3478 I		2733	14795	0175	00114	0779
0175	0510 D	3460 D		2737	14738	0194	00146	0741
0200	0468 I	3462 I		2743	14725	0212	00180	0678
*0225	0458 I	3470 I		2750	14726	0228	00216	0613
*0250	0479 D	3482 D		2758	14740	0243	00251	0546
0300	0507 F	3493 B		2763	14761	0269	00326	0506
0400	0529	34977		2764	14788	0320	00510	0508
0500	0445	34937		2771	14769	0369	00733	0449
0600	0384 B	3488 B		2773	14759	0413	00984	0430
0700	0374 C	3489 B		2775	14772	0456	01272	0423

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0378	34907		2776	14790	0499	01603	0424
1000	0370	34912		2777	14820	0585	02403	0428
1200	0364	34912		2777	14851	0673	03400	0439
1500	0358							

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 27X3	AIR T 03.8	VIS
CONS. NO 013	MONTH 4	MXSAMPD	19	WAVES 2 18X4	WET B 03.3	STN
LAT 42-230N	DAY 20	NO.DPTH	18	WND-DIR 270	WW-CODE 02	
LON 50-445W	HR 18.6	W-COLOR		WND-SPD 05	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO 1000.8	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
195	0000	024	33404		2669	14578
195	0010	0242	33380		2666	14581
195	0020	0231	33392		2668	14578
195	0031	0211	33421		2672	14571
195	0053	0116	33515		2686	14534
195	0078	0072	33753		2708	14521
195	0102	0153	34044		2726	14566
195	0156	0172	34248		2741	14586
195	0207	0268	34512		2755	14640
195	0312	0369	34796		2768	14704
186	0405	0428	35012		2779	14747
186	0499	0414	34964		2776	14756
186	0599	0406	34975		2778	14770
186	0791	0365	34910		2777	14783
186	0970	0356	34927		2779	14810
186	1133	0354	34929		2780	14836
186	1460	0349	34911		2779	14888
186	1934	0340	34946		2783	14965

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0240	33404		2669	14578	0000	00000	1365
0010	0242	33380		2666	14581	0014	00001	1385
0020	0231	33392		2668	14578	0028	00003	1368
0030	0213	33418		2672	14572	0041	00006	1336
0050	0130 B	33498		2684	14539	0067	00017	1218
0075	0072	33719		2706	14520	0095	00034	1014
0100	0145	34021		2725	14561	0118	00055	0832
0125	0170 F	3416 G		2735	14578	0138	00078	0741
0150	0173 C	3424 C		2740	14585	0156	00103	0689
0175	0205 B	3435 B		2747	14605	0173	00131	0632
0200	0253	34476		2753	14632	0188	00160	0576
0225	0291	3458 B		2758	14654	0202	00191	0537
0250	0319 B	3465 C		2761	14671	0215	00223	0507
*0300	0362	3477 B		2767	14699	0240	00292	0461
0400	0426	35004		2778	14746	0282	00440	0367
0500	0414	34964		2776	14756	0320	00618	0394
0600	0406	34975		2778	14770	0360	00841	0387
0700	0385 B	3494 B		2778	14777	0399	01106	0396

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0364	34910		2777	14785	0440	01420	0406
1000	0355	34928		2780	14814	0521	02174	0399
1200	0353	34925		2780	14847	0604	03112	0416
1500	0348	3492 B		2780	14895	0733	04918	0435

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 28X3	AIR T 02.4	VIS
CONS. NO 014	MONTH 4	MXSAMPD	20	WAVES 2 19X4	WET B 02.0	STN
LAT 42-240N	DAY 20	NO.DPTH	18	WND-DIR 290	WW-CODE 02	
LON 50-130W	HR 22.4	W-COLOR		WND-SPD 02	CLD-TPE 7	
MARSD SQ 150		W-TRNSP		BARO 1000.8	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
235	0000	020	33441		2675	14561
235	0010	0195	33414		2673	14560
235	0020	0205	33431		2673	14567
235	0031	0128	33437		2679	14534
235	0053	-0009	33590		2699	14478
235	0078	0051	33829		2716	14513
235	0102	0143	34177		2738	14563
235	0156	0173	34315		2747	14587
235	0207	0227	34460		2754	14621
235	0312	0353	34771		2767	14697
224	0435	0402	34907		2773	14740
224	0533	0386	34910		2775	14749
224	0628	0377	34907		2776	14761
224	0844	0363	34907		2777	14791
224	1041	0361	34905		2777	14823
224	1296	0351	34898		2778	14862
224	1528	0354	34906		2778	14902
224	2015	0330	34919		2781	14974

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0200	33441		2675	14561	0000	00000	1307
0010	0195	33414		2673	14560	0013	00001	1325
0020	0205	33431		2673	14567	0027	00003	1319
0030	0137	33436		2679	14538	0040	00006	1269
0050	0004 B	33562		2697	14483	0063	00016	1098
0075	0037 B	33795		2714	14505	0089	00032	0937
0100	0136	34149		2736	14559	0110	00050	0728
0125	0169 F	3429 I		2745	14580	0127	00070	0646
0150	0175 B	3432 D		2747	14587	0143	00093	0627
0175	0191	34368		2749	14599	0159	00119	0606
0200	0219	34440		2753	14616	0174	00148	0574
0225	0251 B	3452 B		2757	14635	0188	00178	0543
0250	0282 B	3460 B		2760	14654	0201	00211	0513
*0300	0340	34740		2766	14689	0226	00280	0465
0400	0397	34888		2772	14732	0271	00440	0422
0500	0394	34915		2775	14747	0313	00634	0408
0600	0379	34908		2776	14758	0354	00867	0406
0700	0371	34907		2776	14771	0395	01142	0407

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0365	34907		2777	14785	0436	01461	0409
1000	0361	34906		2777	14817	0521	02243	0423
1200	0354	34900		2777	14847	0608	03231	0436
1500	0354	34905		2778	14897	0743	05123	0456
2000	0331	34918		2781	14972	0974	09295	0454

C-REF-NO 002	YR 1963	DEPTH 247	WAVES 1 17X4	AIR T 05.0	VIS
CONS. NO 015	MONTH 4	MXSAMPD 02	WAVES 2 18X4	WET B 04.8	STN
LAT 42-355N	DAY 21	NO.DPTH 10	WND-DIR 170	WW-CODE 45	
LUN 50-000W	HR 11.4	W-COLOR	WND-SPD 07	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 999.7	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
114	0000	001	32832		2638	14467
114	0010	-0031	32896		2645	14451
114	0020	-0094	33003		2656	14425
114	0029	-0129	33086		2663	14411
114	0049	-0098	33316		2681	14432
114	0073	-0010	33516		2694	14480
114	0098	0068	33774		2710	14523
114	0147	0130	33955		2721	14561
114	0196	0186	34183		2735	14598
114	0220	0225	34336		2744	14621

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0010	32832		2638	14467	0000	00000	1659
0010	-0031	32896		2645	14451	0016	00001	1593
0020	-0094	33003		2656	14425	0032	00003	1487
0030	-0130	33097		2664	14411	0046	00007	1404
0050	-0095	33325		2682	14434	0073	00018	1239
0075	-0003	33538		2695	14484	0103	00036	1113
0100	0072	33785		2711	14525	0129	00060	0964
0125	0110 C	3390 E		2717	14548	0152	00087	0902
0150	0133	33967		2722	14564	0175	00118	0866
0175	0160	34075		2728	14581	0196	00153	0803
0200	0195	34213		2737	14603	0215	00190	0727

C-REF-NO 002	YR 1963	DEPTH 1646	WAVES 1 28X3	AIR T 03.2	VIS
CONS. NO 016	MONTH 4	MXSAMPD 14	WAVES 2 18X3	WET B 03.0	STN
LAT 42-420N	DAY 21	NO.DPTH 17	WND-DIR 260	WW-CODE 45	
LON 50-195W	HR 14.1	W-COLOR	WND-SPD 10	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 999.7	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
168	0000	000	32846		2639	14463
168	0010	-0016	32843		2640	14457
168	0020	-0040	32881		2644	14448
168	0030	0083	33168		2661	14510
168	0050	0206	33637		2690	14575
168	0075	0279	33955		2709	14615
168	0099	0160	34011		2723	14568
168	0148	0186	34274		2742	14591
168	0197	0238	34460		2753	14624
168	0296	0421	34805		2763	14723
141	0353	0360	34813		2770	14707
141	0443	0377	34882		2774	14730
141	0535	0380	34876		2773	14747
141	0719	0380	34898		2775	14778
141	0910	0375	34908		2776	14807
141	1147	0366	34913		2777	14843
141	1377	0357	34893		2777	14878

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0000	32846		2639	14463	0000	00000	1644
0010	-0016	32843		2640	14457	0017	00001	1639
0020	-0040	32881		2644	14448	0033	00003	1600
0030	0083	33168		2661	14510	0048	00007	1440
0050	0206	33637		2690	14575	0074	00018	1165
0075	0279	33955		2709	14615	0101	00035	0983
0100	0159	34016		2724	14567	0124	00055	0845
0125	0150 G	3414 C		2734	14569	0145	00078	0743
0150	0188	34282		2743	14592	0162	00103	0666
0175	0211	34382		2749	14608	0178	00130	0611
0200	0245 B	34474		2754	14628	0193	00159	0571
0225	0303 H	3458 C		2757	14659	0207	00189	0543
*0250	0352 I	3467 D		2760	14685	0221	00222	0523
0300	0418	34807		2764	14723	0246	00294	0495
0400	0361 C	3485 B		2773	14716	0292	00457	0413
0500	0380	34882		2773	14741	0334	00651	0417
0600	0381	34882		2773	14758	0377	00893	0427
0700	0380	34895		2774	14775	0420	01182	0426
0800	0378	34903		2775	14790	0463	01515	0427

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0372	34912		2777	14821	0550	02320	0431
1200	0364	34908		2777	14851	0638	03324	0442

C-REF-NO 002	YR 1963	DEPTH 1737	WAVES 1 27X3	AIR T 03.5	VIS
CONS. NO 017	MONTH 4	MXSAMPD 17	WAVES 2 18X3	WET B 03.2	STN
LAT 42-455N	DAY 21	NO.DPTH 17	WND-DIR 270	WW-CODE 02	
LON 50-340W	HR 18.7	W-COLOR	WND-SPD 07	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 999.9	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
196	0000	004	32884		2640	14482
196	0010	-0004	32877		2642	14463
196	0020	-0006	32890		2643	14464
196	0030	0117	33166		2658	14526
196	0050	0215	33587		2685	14578
196	0075	0052	33583		2696	14509
196	0099	0060	33856		2717	14521
196	0148	0210	34296		2742	14602
196	0197	0270	34519		2755	14639
196	0296	0328	34704		2764	14683
187	0461	0370	34841		2771	14730
187	0568	0376	34876		2773	14750
187	0688	0378	34885		2774	14771
187	0918	0376	34893		2775	14809
187	1135	0369	34893		2775	14842
187	1410	0358	34894		2777	14884
187	1708	0356	34908		2778	14933

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0040	32884		2640	14482	0000	00000	1634
0010	-0004	32877		2642	14463	0016	00001	1618
0020	-0006	32890		2643	14464	0033	00003	1607
0030	0117	33166		2658	14526	0048	00007	1461
0050	0215	33587		2685	14578	0075	00018	1209
0075	0052	33583		2696	14509	0104	00037	1106
0100	0063	33867		2718	14522	0129	00059	0896
0125	0134 F	34113		2733	14562	0150	00083	0755
0150	0214	34308		2743	14604	0168	00108	0667
0175	0250 B	3444 B		2750	14626	0184	00135	0600
0200	0273	34528		2755	14641	0199	00162	0554
0225	0292	3459 C		2759	14654	0212	00192	0523
*0250	0308 B	3465 C		2762	14666	0225	00224	0501
0300	0330	34709		2765	14684	0250	00293	0478
0400	0361	34809		2770	14715	0296	00460	0443
0500	0373	34858		2772	14738	0340	00663	0428
0600	0377	34880		2774	14756	0383	00907	0425
0700	0378	34886		2774	14773	0427	01196	0431
0800	0378	34890		2774	14790	0471	01535	0436

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0374	34893		2775	14822	0560	02364	0447
1200	0366	34893		2776	14852	0651	03401	0455
1500	0358	34899		2777	14899	0792	05354	0466

C-REF-NO 002	YR 1963	DEPTH 1646	WAVES 1 25X3	AIR T 03.5	VIS
CONS. NO 018	MONTH 4	MXSAMPD 15	WAVES 2 18X4	WET B 03.0	STN
LAT 42-400N	DAY 21	NO.DPTH 17	WND-DIR 250	WW-CODE 02	
LON 50-440W	HR 21.7	W-COLOR	WND-SPD 07	CLD-TPE 7	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
223	0000	015	33221		2661	14536
223	0010	0120	33168		2658	14524
223	0020	0148	33230		2661	14539
223	0030	0206	33423		2673	14569
223	0050	0178	33636		2692	14562
223	0075	0267	33920		2707	14609
223	0099	0183	34002		2721	14578
223	0148	0178	34206		2737	14586
223	0197	0270	34485		2752	14639
217	0279	0315	34668		2763	14674
223	0296	0329	34706		2765	14683
217	0386	0400	34915		2774	14731
217	0502	0418	34944		2774	14758
217	0725	0368	34923		2778	14774
217	0945	0365	34927		2779	14809
217	1218	0355	34901		2777	14850
217	1517	0354	34919		2779	14900

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0150	33221		2661	14536	0000	00000	1440
0010	0120	33168		2658	14524	0015	00001	1462
0020	0148	33230		2661	14539	0029	00003	1432
0030	0206	33423		2673	14569	0043	00007	1326
0050	0178	33636		2692	14562	0068	00017	1145
0075	0267	33920		2707	14609	0095	00034	1000
0100	0181	34006		2721	14577	0119	00055	0869
0125	0160 C	34103		2730	14573	0139	00079	0781
0150	0181	34218		2738	14588	0158	00105	0710
0175	0226 C	3436 B		2746	14614	0175	00133	0637
0200	0273	34495		2753	14640	0190	00163	0578
0225	0291 C	3457 D		2757	14653	0205	00193	0542
*0250	0305 D	3462 D		2760	14664	0218	00226	0514
0300	0331	34715		2765	14685	0243	00296	0474
0400	0405	34926		2774	14736	0287	00453	0402
0500	0418	34945		2774	14758	0328	00644	0413
0600	0400 C	3494 B		2776	14767	0370	00878	0406
0700	0375 B	34927		2778	14773	0410	01150	0397
0800	0365	34924		2778	14785	0450	01459	0396

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0363	34922		2778	14818	0532	02220	0413
1200	0356	34903		2778	14848	0618	03196	0435
1500	0354	34918		2779	14898	0752	05066	0446

C-REF-NO 002	YR 1963	DEPTH 1829	WAVES 1 25X3	AIR T 03.5	VIS
CONS. NO 019	MONTH 4	MXSAMPD 16	WAVES 2 18X4	WET B 02.5	STN
LAT 42-420N	DAY 22	NO.DPTH 17	WND-DIR 250	WW-CODE 02	
LON 51-060W	HR 14.6	W-COLOR	WND-SPD 07	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
155	0000	002	32923		2644	14473
155	0011	-0009	32928		2646	14462
155	0021	-0016	32928		2646	14460
155	0032	-0012	32928		2646	14464
155	0052	0152	33302		2667	14547
155	0077	0005	33521		2693	14487
155	0104	0039	33815		2715	14511
155	0157	0208	34306		2743	14602
155	0208	0251	34478		2753	14632
155	0312	0345	34740		2766	14693
146	0453	0368	34831		2771	14727
146	0554	0378	34862		2772	14749
146	0653	0381	34900		2775	14767
146	0843	0382	34908		2775	14799
146	1042	0392	34936		2777	14837
146	1302	0358	34913		2778	14866
146	1567	0356	34905		2778	14909

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0020	32923		2644	14473	0000	00000	1594
0010	-0006	32927		2646	14463	0016	00001	1580
0020	-0016	32928		2646	14460	0032	00003	1574
0030	-0015	32923		2646	14462	0048	00007	1578
0050	0137 D	3326 C		2664	14539	0078	00019	1404
0075	0021 D	33508		2691	14494	0110	00040	1147
0100	0027 B	33770		2712	14504	0136	00063	0950
0125	0105 E	3404 B		2729	14548	0158	00088	0795
0150	0185 C	34254		2741	14591	0177	00114	0687
0175	0230 B	3439 C		2748	14616	0194	00142	0623
0200	0248 B	3446 B		2752	14629	0209	00171	0582
0225	0268	34531		2756	14643	0223	00202	0549
0250	0292 B	34601		2760	14659	0236	00235	0520
*0300	0336	34717		2765	14687	0262	00306	0478
0400	0367 B	3482 C		2770	14718	0308	00472	0442
0500	0373	34847		2771	14738	0352	00678	0437
0600	0380	34881		2773	14758	0396	00924	0427
0700	0381	34905		2775	14775	0439	01211	0420
0800	0382	34909		2775	14792	0482	01541	0427

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	PDT.EN	SVA
1000	0391	34931		2776	14829	0569	02355	0439
1200	0373 B	34925		2778	14855	0659	03365	0439
1500	0361 B	34913		2778	14900	0795	05271	0459

C-REF-NO 002	YR 1963	DEPTH 2012	WAVES 1 25X4	AIR T 03.5	VIS
CONS. NO 020	MONTH 4	MXSAMPD 18	WAVES 2 27X4	WET B 02.5	STN
LAT 42-480N	DAY 22	NO.DPTH 17	WND-DIR 260	WW-CODE 02	
LON 51-170W	HR 17.8	W-COLOR	WND-SPD 07	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
192	0000	014	33051		2648	14529
192	0011	0134	33015		2645	14528
192	0021	0118	33030		2647	14523
192	0032	-0005	33150		2664	14470
192	0052	-0073	33232		2673	14443
192	0077	-0072	33327		2681	14449
192	0104	-0047	33464		2691	14467
192	0157	0114	33915		2719	14555
192	0208	0201	34309		2744	14608
192	0312	0300	34621		2760	14672
178	0505	0487	35000		2771	14788
183	0642	0431	34961		2774	14787
183	0750	0397	34935		2776	14790
183	0946	0372				
183	1177	0468	34936		2768	14891
183	1440	0382	34922		2776	14899
183	1760	0361	34921		2778	14944

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0140	33051		2648	14529	0000	00000	1563
0010	0150 E	33008		2644	14535	0016	00001	1603
0020	0122	33025		2647	14524	0032	00003	1571
0030	0019 B	33126		2661	14481	0047	00007	1438
0050	-0072	33228		2673	14443	0075	00018	1321
0075	-0074	33319		2680	14448	0107	00039	1249
0100	-0053	33441		2689	14463	0138	00066	1164
0125	0012 D	3363 C		2702	14500	0166	00098	1048
0150	0091 B	3385 B		2715	14543	0190	00133	0927
0175	0150	34065		2728	14577	0212	00169	0803
0200	0190	34254		2740	14601	0231	00206	0692
0225	0221 B	3439 C		2748	14620	0248	00242	0618
0250	0247 B	3448 F		2754	14637	0263	00278	0571
*0300	0291	3460 C		2760	14666	0290	00356	0520
0400	0404 G	3484 C		2768	14734	0340	00533	0465
0500	0484	34995		2771	14786	0386	00747	0452
0600	0456 C	3499 B		2774	14791	0431	01001	0436
0700	0411	34946		2775	14788	0475	01291	0424
0800	0384	34932		2777	14793	0517	01617	0412

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0396 E	3493 B		2775	14831	0604	02428	0448
1200	0463 B	34935		2769	14893	0705	03582	0548
1500	0425 I	34926		2772	14927	0870	05871	0534

C-REF-NO 002	YR 1963	DEPTH 1192	WAVES 1 25X4	AIR T 04.5	VIS
CONS. NO 021	MONTH 4	MXSAMPD 12	WAVES 2 27X4	WET B 03.5	STN
LAT 42-570N	DAY 22	NO.DPTH 15	WND-DIR 250	WW-CODE 02	
LON 51-270W	HR 21.2	W-COLOR	WND-SPD 07	CLD-TPE 2	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
218	0000	007	33065		2653	14498
218	0010	0063	33060		2653	14496
218	0020	0060	33055		2653	14497
218	0030	0063	33055		2653	14500
218	0050	0055	33074		2655	14500
218	0075	-0096	33167		2669	14435
218	0099	-0077	33350		2683	14451
218	0148	0654	34543		2714	14791
218	0197	0580	34593		2728	14770
212	0325	0273	34527		2755	14662
212	0450	0413	34853		2768	14746
212	0559	0417	34911		2772	14767
212	0677	0399	34916		2774	14779
212	0922	0384	34910		2775	14813
212	1170	0366				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0070	33065		2653	14498	0000	00000	1511
0010	0063	33060		2653	14496	0015	00001	1511
0020	0060	33055		2653	14497	0030	00003	1513
0030	0063	33055		2653	14500	0046	00007	1515
0050	0055	33074		2655	14500	0076	00019	1496
0075	-0096	33167		2669	14435	0112	00042	1358
0100	-0063 C	3338 B		2684	14458	0144	00071	1210
0125	0303 I	3399 I		2710	14634	0172	00103	0984
0150	0659 C	3456 B		2715	14793	0196	00137	0951
0175	0665 I	3464 I		2721	14801	0220	00176	0897
0200	0571 B	34591		2729	14767	0241	00217	0821
0225	0500 I	3457 E		2736	14742	0261	00261	0753
*0250	0435 I	3456 G		2742	14719	0279	00305	0695
*0300	0322 H	3454 E		2752	14678	0312	00397	0600
0400	0340 I	3472 G		2764	14705	0367	00592	0490
0500	0423 B	3490 B		2770	14759	0415	00812	0455
0600	0412	34916		2773	14771	0460	01066	0437
0700	0397	3493 B		2776	14782	0503	01355	0418
0800	0390	3493 B		2777	14796	0545	01681	0418
1000	0374 B							

C-REF-NO 002	YR 1963	DEPTH 1189	WAVES 1 23X3	AIR T 03.5	VIS
CUNS. NO 022	MONTH 4	MXSAMPD 11	WAVES 2 26X4	WET B 03.0	STN
LAT 43-020N	DAY 22	NO.DPTH 15	WND-DIR 220	WW-CODE 02	
LON 51-370W	HR 23.4	W-COLOR	WND-SPD 05	CLD-TPE 2	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 3	HW

O B S E R V E D

	GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
#244	0000		010	33139		2657	14513
#244	0010		0071	33116		2657	14501
#244	0020		0069	33106		2656	14501
#244	0030		0080	33115		2657	14508
#244	0050		0090	33132		2657	14516
#244	0075		0359	33545		2669	14644
#244	0100		0440	34103		2705	14690
#244	0150		0517	34552		2732	14736
#244	0200		0313	34473		2747	14657
	234	0325	0316	34671		2763	14682
	234	0432	0349	34778		2768	14715
	234	0548	0432	34951		2773	14772
	234	0654	0396	34931		2776	14774
	234	0868	0376	34916		2777	14801
	234	1091	0360	34921		2779	14831

#MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
	0000	0100	33139		2657	14513	0000	00000	1472
	0010	0071	33116		2657	14501	0015	00001	1473
	0020	0069	33106		2656	14501	0030	00003	1479
	0030	0080	33115		2657	14508	0045	00007	1479
	0050	0090	33132		2657	14516	0074	00019	1471
	0075	0359	33545		2669	14644	0110	00042	1364
	0100	0440	34103		2705	14690	0140	00068	1026
	0125	0503 D	3442 D		2723	14724	0164	00096	0863
	0150	0517	34552		2732	14736	0185	00125	0780
	0175	0425 H	3454 F		2742	14702	0203	00155	0690
	0200	0313	34473		2747	14657	0220	00187	0631
	0225	0283 I	3449 D		2752	14649	0235	00221	0590
	0250	0268 I	3452 G		2756	14647	0250	00256	0556
	*0300	0285 I	3461 D		2761	14664	0277	00332	0508
	0400	0335	34746		2767	14704	0326	00507	0463
	0500	0402 D	3489 C		2772	14751	0371	00717	0437
	0600	0420 C	3495 B		2775	14775	0414	00962	0420
	0700	0389	34926		2776	14778	0457	01243	0413
	0800	0378	34918		2776	14791	0498	01567	0416
	1000	0358 B	34915		2778	14816	0582	02345	0413

C-REF-NO 002	YR 1963	DEPTH 1463	WAVES 1 11X2	AIR T 05.0	VIS
CONS. NO 023	MONTH 4	MXSAMPD 12	WAVES 2 26X3	WET B 05.0	STN
LAT 43-080N	DAY 23	NO.DPTH 16	WND-DIR 010	WW-CODE 60	
LUN 51-490W	HR 02.2	W-COLOR	WND-SPD 08	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 999.8	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
039	0000	035	33223		2645	14623
039	0010	0157	33179		2657	14540
039	0020	0122	33204		2661	14527
039	0030	0120	33256		2665	14528
039	0050	0164	33478		2680	14554
039	0075	0276	33759		2694	14611
039	0098	0147	33737		2702	14558
039	0147	0208	34298		2743	14601
039	0197	0349	34612		2755	14674
022	0335	0362	34731		2763	14704
022	0422	0379	34824		2769	14727
022	0523	0373	34854		2772	14741
022	0617	0376	34885		2774	14759
022	0800	0370	34894		2775	14787
022	0986	0372	34914		2777	14819
022	1230	0366	34929		2779	14857

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0350	33223		2645	14623	0000	00000	1593
0010	0157	33179		2657	14540	0015	00001	1477
0020	0122	33204		2661	14527	0030	00003	1436
0030	0120	33256		2665	14528	0044	00007	1395
0050	0164	33478		2680	14554	0071	00017	1255
0075	0276	33759		2694	14611	0101	00037	1129
0100	0144 B	3375 B		2704	14557	0128	00061	1033
0125	0148 H	3401 I		2724	14566	0152	00088	0842
0150	0216	34323		2744	14605	0171	00114	0658
0175	0287 C	34499		2752	14642	0187	00140	0586
0200	0352	34620		2755	14676	0201	00168	0558
0225	0373 H	3468 H		2758	14690	0215	00198	0537
*0250	0386 I	3472 I		2760	14700	0228	00231	0521
*0300	0384 I	3475 I		2763	14708	0254	00304	0501
0400	0375	34803		2768	14721	0303	00478	0462
0500	0375	34851		2771	14739	0348	00687	0436
0600	0375	34880		2774	14756	0391	00932	0423
0700	0374	34893		2775	14772	0434	01217	0421
0800	0370	34894		2775	14787	0477	01547	0424
1000	0369	34911		2777	14820	0563	02347	0428

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0366	34927		2778	14853	0650	03333	0431

C-REF-NO 002	YR 1963	DEPTH 1372	WAVES 1 26X3	AIR T 02.6	VIS
CONS. NO 024	MONTH 4	MXSAMPD 12	WAVES 2 27XX	WET B 02.0	STN
LAT 43-140N	DAY 23	NO.DPTH 16	WND-DIR 260	WW-CODE 01	
LON 52-020W	HR 10.2	W-COLOR	WND-SPD 05	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 998.9	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
114	0000	030	33265		2652	14603
114	0010	0306	33255		2651	14607
114	0020	0299	33255		2652	14605
114	0030	0296	33271		2653	14606
114	0050	0238	33263		2657	14584
114	0074	0043	33313		2675	14501
114	0099	0193	33708		2697	14578
114	0148	0176	34125		2731	14584
114	0198	0307	34467		2748	14654
102	0334	0411	34783		2762	14725
102	0429	0450	34912		2768	14759
102	0524	0380	34837		2770	14744
102	0619	0409	34921		2774	14773
102	0812	0410	34953		2776	14806
102	1006	0392	34949		2778	14831
102	1250	0373	34931		2778	14864

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0300	33265		2652	14603	0000	00000	1518
0010	0306	33255		2651	14607	0015	00001	1531
0020	0299	33255		2652	14605	0031	00003	1526
0030	0296	33271		2653	14606	0046	00007	1512
0050	0238	33263		2657	14584	0076	00019	1472
0075	0047 B	33327		2675	14503	0111	00041	1299
0100	0194	33719		2697	14579	0141	00068	1095
0125	0201 I	3396 D		2716	14589	0166	00097	0916
0150	0180	34141		2732	14587	0188	00127	0768
0175	0241 D	34322		2742	14620	0206	00157	0679
0200	0310	34475		2748	14656	0222	00189	0627
0225	0345 D	3457 E		2752	14676	0238	00222	0589
*0250	0372 F	3485 G		2756	14693	0252	00258	0560
*0300	0405 E	3475 F		2761	14717	0280	00335	0521
0400	0445 B	34887		2767	14752	0330	00515	0476
0500	0398 C	3486 C		2770	14748	0377	00732	0455
0600	0400 B	3490 B		2773	14766	0422	00986	0436
0700	0415 B	3495 B		2775	14790	0466	01278	0427
0800	0411	34954		2776	14805	0509	01611	0428
1000	0393	34949		2778	14830	0596	02414	0428

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0379	34939		2778	14858	0683	03409	0437

C-REF-NO 002	YR 1963	DEPTH 1463	WAVES 1 27X3	AIR T 02.9	VIS
CONS. NO 025	MONTH 4	MXSAMPD 13	WAVES 2 27X3	WET B 02.4	STV
LAT 43-210N	DAY 23	NO.DPTH 16	WND-DIR 270	WW-CODE 02	
LON 52-110W	HR 13.1	W-COLOR	WND-SPD 02	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 999.0	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
137	0000	020	33255		2660	14559
137	0010	0177	33238		2660	14550
137	0020	0165	33242		2661	14546
137	0030	0010	33373		2681	14480
137	0050	0196	33689		2695	14571
137	0075	0133	33928		2718	14551
137	0100	0180	34096		2729	14578
137	0149	0199	34243		2739	14596
137	0199	0485	34761		2752	14734
131	0309	0484	34876		2762	14753
131	0415	0365	34800		2768	14719
131	0517	0380	34857		2771	14743
131	0618	0382	34888		2774	14761
131	0830	0376	34901		2775	14794
131	1040	0369	34905		2776	14826
131	1310	0361	34913		2778	14868

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0200	33255		2660	14559	0000	00000	1448
0010	0177	33238		2660	14550	0015	00001	1445
0020	0165	33242		2661	14546	0029	00003	1434
0030	0010	33373		2681	14480	0043	00006	1246
0050	0196	33689		2695	14571	0066	00016	1118
0075	0133	33928		2718	14551	0092	00032	0894
0100	0180	34096		2729	14578	0113	00051	0800
0125	0180 G	3416 F		2734	14583	0133	00073	0749
0150	0204	34253		2739	14599	0151	00099	0701
0175	0342 I	3451 G		2747	14666	0168	00127	0631
0200	0487	34766		2753	14735	0183	00157	0592
0225	0529 I	3486 I		2755	14757	0198	00189	0573
*0250	0546 I	3491 I		2757	14769	0212	00224	0556
*0300	0503 E	3490 D		2761	14759	0239	00300	0524
0400	0381 C	3481 B		2768	14724	0289	00478	0462
0500	0374 B	34844		2771	14738	0335	00688	0439
0600	0382	34884		2773	14759	0378	00935	0428
0700	0381	34898		2775	14775	0421	01223	0425
0800	0377	34902		2775	14790	0465	01556	0427
1000	0370	34905		2776	14820	0552	02365	0434

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0364	34911	.	2777	14851	0640	03369	0440

C-REF-NO 002	YR 1963	DEPTH 1646	WAVES 1 22X3	AIR T 03.5	VIS
CONS. NO 026	MONTH 4	MXSAMPD 15	WAVES 2 22X3	WET B 03.0	STN
LAT 43-272N	DAY 23	NO.DPTH 17	WND-DIR 220	WW-CODE 02	
LON 52-222W	HR 15.8	W-COLOR	WND-SPD 03	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 998.9	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
169	0000	028	32728		2611	14587
169	0010	0243	32744		2616	14572
169	0020	0169	32813		2627	14542
169	0030	0008	33057		2656	14475
169	0050	0069	33104		2656	14506
169	0075	0092	33300		2671	14524
169	0100	0071	33433		2683	14520
169	0150	0103				
169	0200	0419	33980		2698	14696
169	0300	0294	34565		2757	14667
158	0411	0408	34842		2767	14738
158	0516	0401	34888		2772	14753
158	0602	0400	34913		2774	14767
158	0801	0383	34912		2776	14793
158	0995	0377	34912		2776	14822
158	1262	0359	34909		2778	14859
158	1530	0355	34902		2778	14903

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0280	32728		2611	14587	0000	00000	1908
0010	0243	32744		2616	14572	0019	00001	1867
0020	0169	32813		2627	14542	0037	00004	1763
0030	0008	33057		2656	14475	0054	00008	1486
0050	0069	33104		2656	14506	0084	00020	1481
0075	0092	33300		2671	14524	0119	00043	1345
0100	0071	33433		2683	14520	0152	00072	1231
0125	0063 D	33567		2694	14522	0181	00106	1125
0150	0103	33703		2702	14546	0209	00144	1046
0175	0259 I	33840		2702	14621	0235	00189	1058
0200	0419	33980		2698	14696	0262	00241	1106
0225	0425 I	3414 C		2710	14704	0289	00299	0995
0250	0406 I	3429 D		2724	14703	0312	00356	0865
0300	0294	34565		2757	14667	0348	00455	0552
0400	0394 C	34829		2768	14729	0399	00637	0463
0500	0405 B	34888		2771	14752	0445	00847	0441
0600	0400	34913		2774	14766	0489	01095	0426
0700	0392	34918		2775	14780	0532	01382	0423
0800	0383	34912		2776	14793	0575	01713	0426

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0377	34912		2776	14823	0662	02524	0436
1200	0363	34910		2777	14851	0751	03529	0439
1500	0356	34903		2778	14898	0887	05436	0460

C-REF-NO 002	YR 1963	DEPTH 1426	WAVES 1 22X3	AIR T 05.0	VIS
CUNS. NO 027	MONTH 4	MXSAMPD 13	WAVES 2 22X3	WET B 04.1	STV
LAT 43-328N	DAY 23	NO.DPTH 16	WND-DIR 270	WW-CODE 02	
LON 52-310W	HR 19.1	W-COLOR	WND-SPD 03	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 998.9	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
197	0000	021	33091		2646	14561
197	0010	0175	33072		2647	14547
197	0020	0132	33082		2651	14529
197	0030	0073	33144		2659	14505
197	0050	-0024	33256		2673	14466
197	0075	-0010	33338		2679	14478
197	0100	-0041	33385		2684	14468
197	0149	-0013	33605		2701	14492
197	0199	-0059	33836		2722	14482
191	0312	0258	34417		2748	14651
191	0415	0348	34718		2764	14711
191	0522	0370	34835		2771	14740
191	0631	0376	34867		2773	14761
191	0842	0375	34882		2774	14796
191	1054	0387	34898		2774	14836
191	1332	0370	34908		2777	14876

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0210	33091		2646	14561	0000	00000	1580
0010	0175	33072		2647	14547	0016	00001	1570
0020	0132	33082		2651	14529	0031	00003	1535
0030	0073	33144		2659	14505	0047	00007	1453
0050	-0024	33256		2673	14466	0074	00018	1319
0075	-0010	33338		2679	14478	0107	00039	1262
0100	-0041	33385		2684	14468	0138	00067	1211
0125	-0030 D	3349 B		2692	14479	0168	00101	1138
0150	-0014	33610		2701	14492	0195	00140	1051
0175	-0039 D	33724		2712	14486	0221	00182	0951
0200	-0057	33842		2722	14484	0243	00226	0853
0225	-0002 I	3398 C		2730	14515	0264	00270	0775
*0250	0062 I	3411 D		2737	14550	0283	00316	0712
*0300	0216 F	3436 B		2747	14630	0317	00412	0637
0400	0343 B	34687		2762	14706	0375	00618	0516
0500	0369	34823		2770	14736	0424	00842	0450
0600	0375	34863		2772	14755	0468	01095	0435
0700	0376	34875		2773	14772	0512	01389	0436
0800	0375	34881		2774	14789	0557	01731	0440
1000	0384	34894		2774	14826	0648	02576	0459

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0376 B	34903		2776	14856	0741	03631	0460

C-REF-NO 002	YR 1963	DEPTH 1280	WAVES 1 36X3	AIR T 02.5	VIS
CONS. NO 028	MONTH 4	MXSAMPD 10	WAVES 2 22XX	WET B 02.0	STV
LAT 43-397N	DAY 23	NO.DPTH 15	WND-DIR 360	WW-CODE 03	
LON 52-431W	HR 21.4	W-COLOR	WND-SPD 07	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 999.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
220	0000	007	33233		2667	14500
220	0010	0071	33215		2665	14502
220	0020	0057	33204		2665	14497
220	0030	0047	33223		2667	14495
220	0050	0029	33236		2669	14490
220	0075	0023	33447		2686	14494
220	0100	0006	33558		2696	14492
220	0149	0053	33738		2708	14524
220	0199	0083	33895		2719	14548
214	0306	0147	34103		2731	14597
214	0402	0179	34240		2740	14629
214	0512	0237	34419		2750	14675
214	0607	0335	34657		2760	14737
214	0799	0385	34855		2771	14792
214	1014	0338	34907		2780	14809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0070	33233		2667	14500	0000	00000	1383
0010	0071	33215		2665	14502	0014	00001	1398
0020	0057	33204		2665	14497	0028	00003	1398
0030	0047	33223		2667	14495	0042	00006	1378
0050	0029	33236		2669	14490	0070	00018	1359
0075	0023	33447		2686	14494	0102	00038	1195
0100	0006	33558		2696	14492	0131	00064	1101
0125	0024 C	33655		2703	14506	0158	00095	1037
0150	0054	33741		2708	14525	0183	00131	0986
0175	0070	33824		2714	14537	0207	00171	0934
0200	0084	33897		2719	14549	0230	00215	0886
0225	0100	33956		2723	14561	0252	00263	0853
*0250	0115	3401 B		2726	14573	0273	00315	0824
*0300	0144	34094		2731	14595	0314	00429	0780
0400	0178	34237		2740	14629	0389	00696	0702
0500	0229	34396		2749	14669	0456	01005	0630
0600	0328	34640		2759	14732	0516	01341	0551
0700	0377 B	3479 C		2766	14772	0569	01696	0504
0800	0403 F	3489 F		2772	14801	0618	02073	0463
1000	0347	34915		2779	14811	0705	02875	0400

C-REF-NO 002	YR 1963	DEPTH 2195	WAVES 1 36X4	AIR T	VIS
CUNS. NO 029	MONTH 4	MXSAMPD 06	WAVES 2 27XX	WET B	STN
LAT 43-445N	DAY 24	NO.DPTH 14	WND-DIR 360	WW-CODE	
LUN 52-525W	HR 00.2	W-COLOR	WND-SPD 10	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 999.3	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
013	0000	004	33269		2671	14487
013	0010	0031	33253		2670	14485
013	0020	0026	33263		2671	14484
013	0030	0027	33236		2669	14486
013	0052	0014	33253		2671	14484
013	0078	-0033	33522		2695	14470
013	0106	-0012	33599		2700	14485
013	0156	0046	33754		2710	14522
013	0211	0081	33877		2718	14549
002	0297	0126	34060		2729	14586
013	0317	0151	34125		2733	14601
002	0388	0175	34210		2738	14625
002	0470	0210	34333		2745	14655
002	0596	0329	34633		2759	14732

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0040	33269		2671	14487	0000	00000	1340
0010	0031	33253		2670	14485	0014	00001	1348
0020	0026	33263		2671	14484	0027	00003	1337
0030	0027	33236		2669	14486	0041	00006	1358
0050	0016	33245		2670	14484	0068	00017	1345
0075	-0028	3349 B		2692	14471	0099	00037	1138
0100	-0020	3359 B		2700	14481	0127	00062	1063
0125	0010	33659		2704	14499	0153	00092	1026
0150	0039	33736		2709	14518	0179	00128	0982
0175	0060	33800		2713	14533	0203	00169	0946
0200	0075	33855		2716	14544	0226	00214	0914
0225	0085 B	33902		2719	14554	0249	00263	0884
0250	0096 C	3395 B		2723	14563	0271	00317	0854
0300	0130	34070		2730	14588	0312	00433	0788
0400	0179	34225		2739	14629	0388	00704	0712
0500	0237 B	34400		2748	14673	0456	01016	0636
0600	0334	34644		2759	14735	0516	01354	0554

C-REF-NO 002	YR 1963	DEPTH	91	WAVES 1 34X6	AIR T 02.0	VIS
CONS. NO 030	MONTH 4	MXSAMPD	01	WAVES 2 31X0	WET B 01.3	STN
LAT 44-100N	DAY 24	NO.DPTH	6	WND-DIR 340	WW-CODE 02	
LON 52-310W	HR 10.2	W-COLOR		WND-SPD 10	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO 1000.3	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
102	0000	028	32576		2599	14584
102	0010	0277	32581		2600	14585
102	0020	0272	32582		2600	14584
102	0030	0270	32626		2604	14586
102	0049	0168	33244		2661	14552
102	0074	0065	33355		2677	14512

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0280	32576		2599	14584	0000	00000	2023
0010	0277	32581		2600	14585	0020	00001	2017
0020	0272	32582		2600	14584	0041	00004	2013
0030	0270	32626		2604	14586	0061	00009	1978
0050	0190 I	3305 I		2644	14560	0097	00024	1596
0075	0059	3337 C		2678	14509	0133	00046	1275

C-REF-NO 002	YR 1963	DEPTH 146	WAVES 1 02X4	AIR T 03.3	VIS
CONS. NO 031	MONTH 4	MXSAMPD 01	WAVES 2 36XX	WET B 02.5	STN
LAT 44-032N	DAY 24	NO.DPTH 8	WND-DIR 020	WW-CODE 03	
LON 52-480W	HR 14.6	W-COLOR	WND-SPD 06	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1000.4	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
146	0000	026	33217		2652	14585
146	0010	0245	33182		2650	14579
146	0020	0234	33221		2654	14577
146	0030	0234	33230		2655	14578
146	0049	0094	33236		2665	14519
146	0074	0232	33691		2692	14591
146	0098	0193	33925		2714	14581
146	0133	0175	34165		2734	14582

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0260	33217		2652	14585	0000	00000	1522
0010	0245	33182		2650	14579	0015	00001	1537
0020	0234	33221		2654	14577	0031	00003	1500
0030	0234	33230		2655	14578	0046	00007	1493
0050	0098 B	3325 B		2666	14521	0075	00019	1385
0075	0232	33703		2693	14591	0107	00039	1135
0100	0234 I	3397 E		2715	14600	0133	00062	0933
0125	0200 E	3414 B		2730	14591	0154	00087	0783

C-REF-NO 002	YR 1963	DEPTH 732	WAVES 1 03X3	AIR T	VIS
CONS. NO 032	MONTH 4	MXSAMPD 07	WAVES 2 36XX	WET B	STN
LAT 43-565N	DAY 24	NU.DPTH 13	WND-DIR 030	WW-CODE	
LON 52-550W	HR 16.0	W-COLOR	WND-SPD 07	CLD-TPE	
MARSD SQ 150		W-TRNSP	BARO 1000.4	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
165	0000	033	33124		2639	14614
165	0010	0335	33104		2636	14617
165	0020	0319	33101		2638	14612
165	0030	0313	33114		2639	14611
165	0050	0306	33128		2641	14611
165	0074	0472	34015		2695	14698
165	0099	0213	33884		2709	14589
165	0149	0530	34519		2728	14741
160	0235	0332	34507		2748	14672
160	0329	0376	34687		2758	14708
160	0423	0348	34710		2763	14712
160	0517	0401	34830		2767	14752
160	0705	0392	34883		2772	14780

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0330	33124		2639	14614	0000	00000	1650
0010	0335	33104		2636	14617	0017	00001	1670
0020	0319	33101		2638	14612	0033	00003	1659
0030	0313	33114		2639	14611	0050	00008	1645
0050	0306	33128		2641	14611	0083	00021	1629
0075	0463 B	3402 B		2696	14694	0118	00043	1112
0100	0215 C	3389 B		2710	14591	0144	00066	0980
0125	0328 I	3417 I		2722	14647	0167	00093	0869
0150	0530	34522		2728	14741	0189	00123	0817
0175	0508 I	3458 I		2736	14736	0208	00156	0751
*0200	0456 I	3459 I		2742	14719	0226	00190	0691
*0225	0373 I	3454 G		2747	14688	0243	00227	0642
0250	0332 D	3453 B		2751	14675	0259	00265	0608
0300	0352 F	3463 C		2756	14693	0288	00348	0560
0400	0354 C	3471 B		2762	14711	0343	00542	0512
0500	0390 B	34807		2766	14744	0393	00774	0484
0600	0377 H	3483 E		2770	14756	0441	01043	0460
0700	0391	34881		2772	14779	0487	01351	0449

C-REF-NO 002	YR 1963	DEPTH 1372	WAVES 1 04X2	AIR T 03.2	VIS
CONS. NO 033	MONTH 4	MXSAMPD 13	WAVES 2 04XX	WET B 02.2	STN
LAT 43-510N	DAY 24	NO.DPTH 16	WND-DIR CALM	WW-CODE 02	
LON 53-045W	HR 18.1	W-COLOR	WND-SPD 05	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 1000.0	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
188	0000	032	33180		2644	14610
188	0010	0321	33141		2641	14612
188	0019	0318	33155		2642	14612
188	0029	0318	33202		2646	14614
188	0048	0413	33375		2650	14660
188	0073	1014	35018		2696	14921
188	0097	0850	34762		2703	14861
188	0145	0585	34461		2717	14761
188	0193	0429	34401		2730	14704
188	0289	0405	34584		2747	14713
181	0429	0348	34709		2763	14713
181	0537	0353	34752		2766	14734
181	0641	0386	34845		2770	14766
181	0857	0384	34864		2772	14802
181	1056	0378	34862		2772	14832
181	1329	0377	34904		2776	14878

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0320	33180		2644	14610	0000	00000	1599
0010	0321	33141		2641	14612	0016	00001	1630
0020	0317	33158		2642	14612	0033	00003	1614
0030	0318	3320 B		2646	14614	0049	00007	1585
0050	0466 H	3351 I		2656	14684	0080	00020	1491
0075	1014 E	3503 F		2697	14922	0112	00041	1112
0100	0831	34736		2704	14854	0140	00065	1048
0125	0684	34555		2711	14799	0165	00094	0981
0150	0564	34447		2718	14754	0189	00128	0913
0175	0475	3440 B		2725	14721	0211	00165	0847
0200	0421 B	3441 B		2732	14702	0232	00204	0787
0225	0400 G	3444 E		2737	14698	0251	00246	0741
*0250	0392 H	3449 E		2741	14700	0269	00291	0701
0300	0400	34598		2749	14712	0303	00385	0632
0400	0358 B	34693		2761	14713	0361	00593	0526
0500	0347	34737		2765	14725	0413	00830	0491
0600	0373	34809		2768	14754	0461	01105	0473
0700	0390 B	3486 B		2771	14778	0509	01421	0462
0800	0389 B	3487 B		2772	14795	0556	01782	0463
1000	0380	34862		2772	14824	0651	02665	0477

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0378	34887		2774	14857	0747	03757	0474

C-REF-NO 002	YR 1963	DEPTH 2377	WAVES 1 06X4	AIR T 01.5	VIS
CUNS. NO 034	MONTH 4	MXSAMPD 22	WAVES 2 07XX	WET B 01.3	STN
LAT 43-440N	DAY 25	NO.DPTH 17	WND-DIR 340	WW-CODE 68	
LON 53-120W	HR 12.3	W-COLOR	WND-SPD 12	CLD-TPE 6	
MARSD SQ 150		W-TRNSP	BARO 998.2	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
134	0000	011	33149		2657	14517
134	0010	0103	33151		2658	14516
134	0019	0098	33152		2658	14515
134	0029	0095	33147		2658	14515
134	0048	-0026	33378		2683	14466
134	0072	-0014	33584		2699	14479
134	0097	0009	33670		2705	14495
134	0145	0027	33754		2711	14512
134	0193	0058	33823		2715	14535
134	0290	0104	33990		2725	14574
123	0540	0317	34617		2759	14717
123	0652	0368	34806		2769	14760
123	0868	0388	34914		2775	14806
123	1085	0377	34882		2774	14837
123	1364	0381	34901		2775	14886
123	1630	0362	34947		2780	14923
123	2185	0305	34960		2787	14993

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0110	33149		2657	14517	0000	00000	1470
0010	0103	33151		2658	14516	0015	00001	1464
0020	0099	33150		2658	14515	0030	00003	1463
0030	0089	33156		2659	14513	0044	00007	1453
0050	-0029	33399		2685	14466	0071	00018	1207
0075	-0011	33599		2700	14481	0100	00036	1062
0100	0010	33677		2706	14496	0126	00059	1013
0125	0021	33726		2709	14505	0151	00088	0980
0150	0030	33761		2711	14514	0175	00123	0958
0175	0046	33797		2713	14526	0199	00162	0939
0200	0061	33834		2715	14538	0223	00208	0921
0225	0073	33874		2718	14548	0246	00258	0898
*0250	0085	33916		2721	14558	0268	00312	0873
0300	0113	34015		2727	14580	0311	00432	0818
0400	0198 F	3427 F		2741	14638	0387	00704	0697
*0500	0283 C	3452 C		2754	14695	0452	01002	0591
0600	0348	34727		2764	14742	0507	01314	0507
0700	0378	3485 B		2771	14773	0556	01638	0457
0800	0389 B	3491 B		2774	14795	0601	01987	0437

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0382	3490 B		2775	14825	0691	02823	0452
1200	0379	34884		2774	14857	0786	03892	0477
1500	0373	34924		2778	14906	0929	05887	0466
2000	0331	3495 B		2784	14973	1157	09968	0429

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 26X3	AIR T 02.5	VIS
CONS. NO 035	MONTH 4	MXSAMPD	22	WAVES 2 27XX	WET B 02.2	STN
LAT 43-263N	DAY 26	NO.DPTH	18	WND-DIR 260	WW-CODE 01	
LON 53-100W	HR 15.0	W-COLOR		WND-SPD 11	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARU 1000.1	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
159	0000	018	33152		2653	14548
159	0009	0157	33144		2654	14540
159	0018	0157	33163		2656	14541
159	0028	0155	33149		2655	14542
159	0048	0003	33300		2676	14479
159	0073	-0027	33385		2684	14470
159	0098	-0049	33460		2691	14465
159	0146	0024	33723		2709	14510
159	0195	0115	34008		2726	14563
159	0295	0347	34477		2745	14688
150	0432	0363	34792		2768	14721
150	0540	0410	34906		2772	14761
150	0742	0380	34906		2775	14781
150	0864	0368	34900		2776	14797
150	1083	0361	34906		2777	14830
150	1355	0358	34915		2778	14875
150	1620	0351	34929		2780	14917
150	2163	0315				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0180	33152		2653	14548	0000	00000	1513
0010	0156	33146		2654	14540	0015	00001	1501
0020	0159	33159		2655	14542	0030	00003	1493
0030	0142 C	3316 B		2656	14536	0045	00007	1481
0050	-0003	33309		2677	14476	0073	00018	1288
0075	-0030	33390		2684	14469	0105	00038	1213
0100	-0046	33469		2691	14466	0134	00065	1144
0125	-0018 C	3360 B		2700	14486	0162	00097	1059
0150	0031	33747		2710	14514	0188	00133	0970
0175	0076	33893		2719	14541	0211	00172	0885
0200	0128	34036		2727	14570	0232	00213	0811
0225	0191 D	34167		2733	14604	0252	00256	0759
*0250	0250 E	34288		2738	14636	0271	00301	0718
0300	0310 B	34494		2746	14690	0306	00399	0660
0400	0373 F	3474 B		2763	14720	0364	00606	0504
0500	0393 B	34875		2772	14747	0412	00824	0437
0600	0408 C	3492 B		2774	14770	0456	01072	0429
0700	0392 B	3492 B		2775	14780	0499	01360	0423

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0374	34903		2776	14788	0541	01690	0422
1000	0362	34902		2777	14817	0627	02486	0427
1200	0360	34909		2778	14849	0715	03476	0435
1500	0355	34922		2779	14898	0848	05340	0444
2000	0328							

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 26X4	AIR T 02.0	VIS
CONS. NO 036	MONTH 4	MXSAMPD	14	WAVES 2 27XX	WET B 01.7	STN
LAT 43-053N	DAY 26	NO.DPTH	18	WND-DIR 250	WW-CODE 02	
LUN 53-125W	HR 18.5	W-COLOR		WND-SPD 12	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO 1000.5	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
193	0000	004	33144		2661	14485
193	0009	0033	33110		2659	14483
193	0017	0018	33134		2661	14478
193	0026	0017	33104		2659	14479
193	0045	0010	33173		2665	14480
193	0068	0238	33764		2697	14594
193	0092	0077	33784		2710	14526
193	0138	0117	34012		2726	14555
193	0184	0199	34275		2741	14603
193	0277	0338	34596		2755	14682
185	0315	0340	34708		2764	14691
185	0398	0395	34867		2771	14730
185	0540	0379	34907		2776	14748
185	0645	0376	34864		2772	14763
185	0780	0426	34923		2772	14807
185	0940	0369	34917		2777	14810
185	1072	0369	34909		2777	14832
185	1400	0345	34934		2781	14877

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0040	33144		2661	14485	0000	00000	1436
0010	0031	33113		2659	14483	0015	00001	1455
0020	0017	33125		2661	14478	0029	00003	1438
0030	0008 C	3310 B		2659	14475	0044	00007	1457
0050	0064 I	3330 H		2672	14507	0072	00018	1328
0075	0206 I	3380 F		2703	14581	0102	00037	1044
0100	0066 L	3381 B		2713	14523	0127	00059	0939
0125	0080 G	3393 B		2722	14535	0149	00085	0857
0150	0137	34082		2731	14567	0170	00114	0781
0175	0182	34225		2739	14593	0189	00145	0706
0200	0231 B	3434 B		2744	14620	0206	00178	0658
0225	0274 C	3444 B		2748	14644	0222	00214	0624
*0250	0309 C	3452 B		2752	14665	0237	00251	0596
0300	0340	34666		2760	14688	0266	00330	0520
0400	0395	34869		2771	14731	0314	00501	0434
0500	0390 C	3492 B		2775	14746	0356	00696	0403
0600	0375	3488 B		2774	14755	0398	00932	0421
0700	0398 C	3488 B		2772	14782	0442	01229	0455

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0421 B	34925		2773	14808	0488	01587	0461
1000	0367	34913		2777	14819	0578	02413	0424
1200	0342 D	34917		2780	14842	0662	03368	0408

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 27X4	AIR T 02.4	VIS
CONS. NO 037	MONTH 4	MXSAMPD 14	WAVES 2 27XX	WET B 01.8	STN	
LAT 42-475N	DAY 26	NO.DPTH 18	WND-DIR 270	WW-CODE 02		
LON 53-120W	HR 22.9	W-COLOR	WND-SPD 10	CLD-TPE 6		
MARSD SQ 150		W-TRNSP	BARO 1000.9	CLD-AMT 7	HW	

O B S E R V E D

	GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
#244	0000		017	33407		2674	14548
#244	0011		0170	33321		2667	14548
#244	0020		0166	33304		2666	14548
#244	0029		0166	33307		2666	14549
#244	0049		0167	33314		2667	14553
#244	0076		0217	33709		2695	14585
#244	0102		0201	33943		2715	14585
#244	0154		0168	34112		2731	14582
#244	0205		0487	34677		2746	14734
	229	0248	0385	34688		2758	14699
	224	0307	0458	34779		2757	14740
	229	0325	0338				
	229	0450	0401	34870		2770	14741
	229	0509	0406	34906		2773	14754
	229	0645	0408	34955		2776	14778
	229	0797	0403	34954		2777	14801
	229	0984	0365	34902		2777	14815
	229	1380	0354	34900		2778	14877

#MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0170	33407		2674	14548	0000	00000	1312
0010	0169	33331		2668	14548	0014	00001	1369
0020	0166	33304		2666	14548	0027	00003	1388
0030	0166	33304		2666	14549	0041	00006	1388
0050	0169	33326		2668	14554	0069	00018	1374
0075	0215	33692		2694	14584	0101	00038	1131
0100	0203	33929		2713	14586	0127	00061	0943
0125	0164 H	3402 H		2723	14574	0149	00087	0849
0150	0164 B	3410 C		2730	14579	0170	00116	0788
0175	0167 I	3436 I		2739	14649	0189	00147	0712
0200	0459 F	3463 D		2745	14721	0206	00181	0664
0225	0453 I	3471 L		2752	14724	0222	00215	0601
0250	0391 C	34691		2757	14702	0237	00251	0549
0300	0462 H	34767		2756	14741	0265	00331	0573
0400	0457 I	3485 B		2768	14735	0317	00516	0462
0500	0406	34901		2772	14752	0363	00724	0432
0600	0436	34944		2775	14770	0405	00965	0412

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0700	0408	34960		2777	14787	0447	01243	0410
0800	0402	34953		2777	14801	0489	01566	0418
1000	0378 E	3492 D		2777	14824	0574	02363	0430
1200	0364 D	3491 C		2777	14851	0663	03364	0441

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 27X6	AIR T	VIS
CONS. NO 038	MONTH 4	MXSAMPD	22	WAVES 2 27XX	WET B	STN
LAT 42-290N	DAY 27	NO.DPTH	18	WND-DIR 270	WW-CODE	
LON 53-120W	HR 02.3	W-COLOR		WND-SPD 06	CLD-TPE	
MARSD SQ 150		W-TRNSP		BARO 1001.3	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
036	0000	037	33142		2636	14631
036	0010	0374	33147		2636	14634
036	0019	0370	33148		2637	14634
036	0029	0370	33119		2634	14635
036	0051	0369	33140		2636	14639
036	0078	0209	33392		2670	14577
036	0104	0198	33606		2688	14580
036	0157	0284	34138		2723	14633
036	0209	0430	34613		2747	14710
036	0315	0451	34850		2763	14740
023	0424	0446	34917		2769	14757
023	0531	0434	34957		2774	14770
023	0733	0407	34965		2777	14792
023	0855	0387	34952		2778	14804
023	1070	0365	34916		2778	14830
023	1342	0353	34929		2780	14871
023	1620	0346	34957		2783	14915
023	2180	0320	35049		2793	15000

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0370	33142		2636	14631	0000	00000	1672
0010	0374	33147		2636	14634	0017	00001	1673
0020	0370	33145		2636	14634	0034	00003	1671
0030	0371	33117		2634	14636	0051	00008	1694
0050	0370	33136		2636	14639	0085	00022	1680
0075	0227 C	33359		2666	14585	0123	00046	1392
0100	0194	33573		2686	14577	0156	00075	1206
0125	0220 B	3381 B		2703	14596	0184	00108	1046
0150	0267	34065		2719	14624	0209	00142	0894
0175	0336 C	3432 B		2733	14661	0230	00177	0768
0200	0406 B	34541		2744	14698	0248	00212	0672
0225	0446 D	3469 D		2751	14721	0264	00247	0609
0250	0462 C	3477 H		2756	14732	0279	00283	0563
*0300	0460 D	3485 D		2762	14741	0306	00359	0509
0400	0449	34911		2768	14754	0355	00534	0462
0500	0438	34948		2773	14766	0400	00742	0433
0600	0426	34967		2775	14778	0443	00984	0415
0700	0412	34968		2777	14789	0485	01263	0408

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0396	34959		2778	14799	0526	01581	0406
1000	0371	34926		2778	14821	0609	02356	0419
1200	0358	34917		2779	14849	0695	03328	0427
1500	0349	34943		2781	14896	0824	05123	0421
2000	0328	35013		2789	14972	1028	08778	0381

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 49X2	AIR T 04.2	VIS
CONS. NO 039	MONTH 4	MXSAMPD	19	WAVES 2 27XX	WET B 03.8	STN
LAT 42-050N	DAY 27	NO.DPTH	18	WND-DIR 090	WW-CODE 02	
LON 53-110W	HR 09.2	W-COLOR		WND-SPD 02	CLD-TPE	
MARSD SQ 150		W-TRNSP		BARO 1001.7	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
100	0000	024	32799		2620	14570
100	0010	0230	32807		2622	14567
100	0020	0230	32798		2621	14569
100	0030	0234	32828		2623	14573
100	0050	0237	32910		2629	14578
100	0075	0948	34813		2691	14895
100	0099	0774	34529		2696	14829
100	0149	0943	35036		2710	14908
100	0199	0699	34774		2726	14820
100	0299	0545	34778		2747	14775
092	0383	0480	34840		2759	14763
092	0477	0424	34848		2766	14755
092	0574	0445	34941		2771	14781
092	0765	0411	34966		2777	14799
092	0962	0382	34948		2779	14819
092	1206	0362	34917		2778	14851
092	1448	0362	34936		2780	14892
092	1943	0355	34955		2782	14973

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0240	32799		2620	14570	0000	00000	1823
0010	0230	32807		2622	14567	0018	00001	1810
0020	0230	32798		2621	14569	0037	00004	1817
0030	0234	32828		2623	14573	0055	00008	1798
0050	0237	32910		2629	14578	0090	00023	1738
0075	0948	34813		2691	14895	0127	00045	1165
0100	0776 B	3454 B		2697	14830	0156	00071	1117
0125	0843 I	3475 I		2703	14863	0183	00103	1061
0150	0940	35034		2710	14907	0209	00140	1004
0175	0835 I	3494 I		2719	14870	0233	00180	0919
0200	0696	34772		2727	14819	0256	00223	0847
0225	0634 F	3474 E		2732	14798	0276	00268	0794
*0250	0587 H	3473 G		2737	14783	0296	00315	0746
0300	0544	34779		2747	14775	0331	00415	0661
0400	0466	34841		2761	14760	0392	00629	0535
0500	0427 B	34869		2768	14760	0443	00864	0479
0600	0443	34952		2772	14785	0490	01128	0447
0700	0428 B	3497 B		2776	14795	0534	01422	0424

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0405	34965		2777	14803	0576	01749	0413
1000	0378	34942		2778	14824	0660	02526	0416
1200	0362	34918		2778	14851	0746	03501	0432
1500	0355 B	3492 C		2779	14898	0879	05361	0445

C-REF-NO 002	YR 1963	DEPTH		WAVES 1	X2	AIR T 05.0	VIS
CONS. NO 040	MONTH 4	MXSAMPD	21	WAVES 2	27XX	WET B 04.5	STN
LAT 41-580N	DAY 27	NO.DPTH	18	WND-DIR	140	WW-CODE 02	
LON 52-560W	HR 12.1	W-COLOR		WND-SPD	02	CLD-TPE 6	
MARSD SQ 150		W-TRNSP		BARO	1001.9	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
131	0000	039	33184		2638	14640
131	0010	0360	33169		2639	14629
131	0020	0354	33163		2639	14628
131	0030	0354	33171		2640	14629
131	0050	0353	33183		2641	14632
131	0075	0178	33319		2667	14562
131	0100	0191	33666		2693	14577
131	0150	0325	34336		2735	14652
131	0200	0365	34538		2748	14680
131	0300	0503	34925		2763	14760
121	0530	0428	34947		2774	14767
121	0622	0416	34968		2777	14777
121	0717	0402	34959		2777	14787
121	0909	0371	34916		2777	14806
121	1100	0361	34917		2778	14833
121	1392	0354	34921		2779	14879
121	1588	0347	34935		2781	14910
121	2085	0339	34958		2784	14991

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0390	33184		2638	14640	0000	00000	1659
0010	0360	33169		2639	14629	0017	00001	1643
0020	0354	33163		2639	14628	0033	00003	1643
0030	0354	33171		2640	14629	0050	00008	1638
0050	0353	33183		2641	14632	0083	00021	1629
0075	0178	33319		2667	14562	0121	00045	1386
0100	0191	33666		2693	14577	0152	00073	1133
0125	0255 E	3403 E		2717	14614	0178	00103	0908
0150	0325	34336		2735	14652	0199	00132	0742
0175	0350 B	3447 E		2743	14669	0217	00161	0669
0200	0365	34538		2748	14680	0233	00193	0633
0225	0401 C	3465 B		2753	14701	0248	00226	0590
0250	0436 D	3475 B		2757	14721	0263	00262	0554
0300	0503	34925		2763	14760	0290	00337	0503
0400	0500 I	3501 I		2770	14776	0338	00509	0451
0500	0451 F	3498 F		2773	14772	0382	00713	0427
0600	0418	34964		2776	14775	0424	00952	0409
0700	0405	34962		2777	14786	0465	01227	0404

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0388	34940		2777	14795	0507	01545	0411
1000	0365	34914		2778	14818	0591	02326	0421
1200	0358	34917		2778	14849	0677	03302	0428
1500	0350	34928		2780	14896	0808	05128	0434
2000	0340	34953		2783	14977	1031	09153	0442

C-REF-NO 002	YR 1963	DEPTH		WAVES 1	XX	AIR T	08.5	VIS
CONS. NO 041	MONTH 4	MXSAMPD	20	WAVES 2	27XX	WET B	06.5	STN
LAT 41-430N	DAY 27	NO.DPTH	18	WND-DIR	110	WW-CODE		
LON 52-450W	HR 15.5	W-COLOR		WND-SPD	02	CLD-TPE	2	
MARSD SQ 150		W-TRNSP		BARO	1002.0	CLD-AMT	3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
155	0000	039	33112		2632	14639
155	0010	0347	33098		2635	14622
155	0020	0361	33147		2637	14630
155	0030	0361	33168		2639	14632
155	0050	0358	33159		2639	14634
155	0075	0237	33288		2660	14588
155	0099	0369	33163		2638	14647
155	0149	0267	33614		2683	14617
155	0199	0250	34169		2729	14626
155	0298	0395	34809		2766	14713
155	0398	0424	34863		2767	14742
155	0497	0464	34982		2772	14777
155	0597	0441	34979		2775	14784
155	0796	0388	34933		2777	14794
155	0995	0367	34918		2778	14818
155	1243	0367	34932		2779	14860
155	1442	0350	34927		2780	14886
155	1990	0345	34959		2783	14977

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0390	33112		2632	14639	0000	00000	1713
0010	0347	33098		2635	14622	0017	00001	1685
0020	0361	33147		2637	14630	0034	00003	1662
0030	0361	33168		2639	14632	0051	00008	1646
0050	0358	33159		2639	14634	0084	00021	1652
0075	0237	33288		2660	14588	0123	00046	1453
0100	0369	33167		2638	14647	0162	00082	1659
0125	0342 I	3333 I		2654	14642	0202	00128	1513
0150	0266	33625		2684	14617	0237	00176	1225
0175	0249	3391 C		2708	14618	0265	00222	1001
0200	0251	34178		2729	14627	0287	00266	0798
0225	0282 F	34395		2744	14647	0306	00306	0664
*0250	0317 G	34573		2755	14669	0321	00343	0564
0300	0396	34813		2766	14714	0347	00416	0468
0400	0425	34866		2767	14743	0395	00586	0469
0500	0464	34983		2772	14777	0440	00797	0437
0600	0440	34978		2775	14784	0484	01043	0423
0700	0412	34957		2776	14789	0526	01327	0417

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0387	34932		2777	14795	0568	01652	0416
1000	0367	34918		2778	14819	0653	02437	0420
1200	0367	34929		2779	14853	0739	03414	0429
1500	0356 C	3494 B		2780	14899	0871	05246	0435
2000	0345	34960		2783	14979	1094	09282	0443

C-REF-NO 002	YR 1963	DEPTH		WAVES 1 09X2	AIR T		VIS
CONS. NO 042	MONTH 4	MXSAMPD	20	WAVES 2 27XX	WET B		STN
LAT 41-300N	DAY 27	NO.DPTH	18	WND-DIR 090	WW-CUDE	02	
LON 52-300W	HR 18.2	W-COLOR		WND-SPD 05	CLD-TPE	6	
MARSD SQ 150		W-TRNSP		BARO 1002.1	CLD-AMT	4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND
190	0000	047	33103		2623	14672
190	0010	0421	33067		2625	14653
190	0020	0392	33070		2628	14643
190	0030	0374	33066		2630	14636
190	0050	0225	33307		2662	14579
190	0075	0273	33709		2690	14609
190	0100	0344	34116		2716	14649
190	0150	0459	34534		2737	14712
190	0200	0505	34766		2751	14742
190	0300	0440	34811		2761	14732
182	0397	0450	34913		2768	14754
182	0496	0418	34909		2772	14757
182	0595	0412	34944		2775	14771
182	0793	0416	34964		2776	14806
182	0992	0396	34979		2780	14831
182	1240	0385	34980		2781	14868
182	1488	0367	34971		2782	14902
182	1984	0341				

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0470	33103		2623	14672	0000	00000	1799
0010	0421	33067		2625	14653	0018	00001	1778
0020	0392	33070		2628	14643	0036	00004	1748
0030	0374	33066		2630	14636	0053	00008	1735
0050	0225	33307		2662	14579	0085	00021	1429
0075	0273	33709		2690	14609	0118	00041	1164
0100	0344	34116		2716	14649	0144	00065	0922
0125	0408	3437 D		2730	14684	0166	00089	0795
0150	0459	34534		2737	14712	0185	00116	0728
0175	0490	34670		2745	14730	0202	00146	0663
0200	0505	34766		2751	14742	0219	00177	0612
0225	0495 E	3480 E		2754	14742	0234	00209	0578
0250	0481 F	3482 G		2758	14741	0248	00244	0550
0300	0440	34811		2761	14732	0275	00320	0516
0400	0449	34913		2769	14754	0324	00496	0461
0500	0417	34910		2772	14757	0369	00705	0438
0600	0412	34945		2775	14772	0413	00949	0416
0700	0414	34959		2776	14790	0455	01231	0418

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0415	34965		2776	14807	0497	01560	0425
1000	0396	34979		2780	14832	0582	02341	0410
1200	0386	34981		2781	14862	0665	03290	0416
1500	0369							
2000	0340							

REFERENCES

- Knudsen, K. , 1901 Hydrographischen Tabellen. Copenhagen, 63 pp.
- Ekman, V.W. , 1908 Die Zusammendrückbarkeit des Meerwassers nebst
einigen Werten für Wasser und Quecksilber.
Publ. Circ. Cons. Explor. Mer. , No. 43, 47 pp.
- Strickland, J.D.H. MS, 1958. Standard methods of seawater analyses.
Volume II. Fish. Res. Bd. Canada, MS Rept. Oceanogr.
and Limnol. , No. 19, 78 pp.
- Strickland, J.D.H. and Parsons, T.R. , 1960. A manual of seawater analysis.
Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.
- Wilson, W.D. , 1960 Equation for the speed of sound in seawater. Journ.
Acoust. Soc. , America 32 (10); p. 1357.
- Rattray, M. Jr. , 1962 Interpolation errors and oceanographic sampling.
Deep Sea Research. vol. 9, pp 25 to 37.
- Sauer, C.D. , and Fofonoff, N.P. 1963. Oceans II, a computer program
for processing oceanographic data (Publication pending).



12

DATA RECORD
HUDSON BAY PROJECT — 1961

No. 12
1964 Data Record Series

Canadian Oceanographic Data Centre

Programmed by the
Canadian Committee on Oceanography

1964

ROGER DUHAMEL, F. R. S. C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

Cat. No. M58-1/1964-12

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street - Ottawa 4

Data Record

HUDSON BAY PROJECT - 1961

(C.O.D.C. References: C.R.N. 354 and 337)

No. 12

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA

and

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

HUDSON BAY PROJECT - 1961

Ships:	M.V. "Calanus"	M.V. "Theta"
Local Cruise designation:	Cal - 61	TA 61-2
Cruise period:	July 20 - Sept. 12	July 12 - Oct. 15
Observers:	See Section I p. 30	See C.O.D.C. Data Record No. 1/1964

ARCTIC UNIT - Montreal

and

DIVISION OF OCEANOGRAPHIC RESEARCH - Ottawa

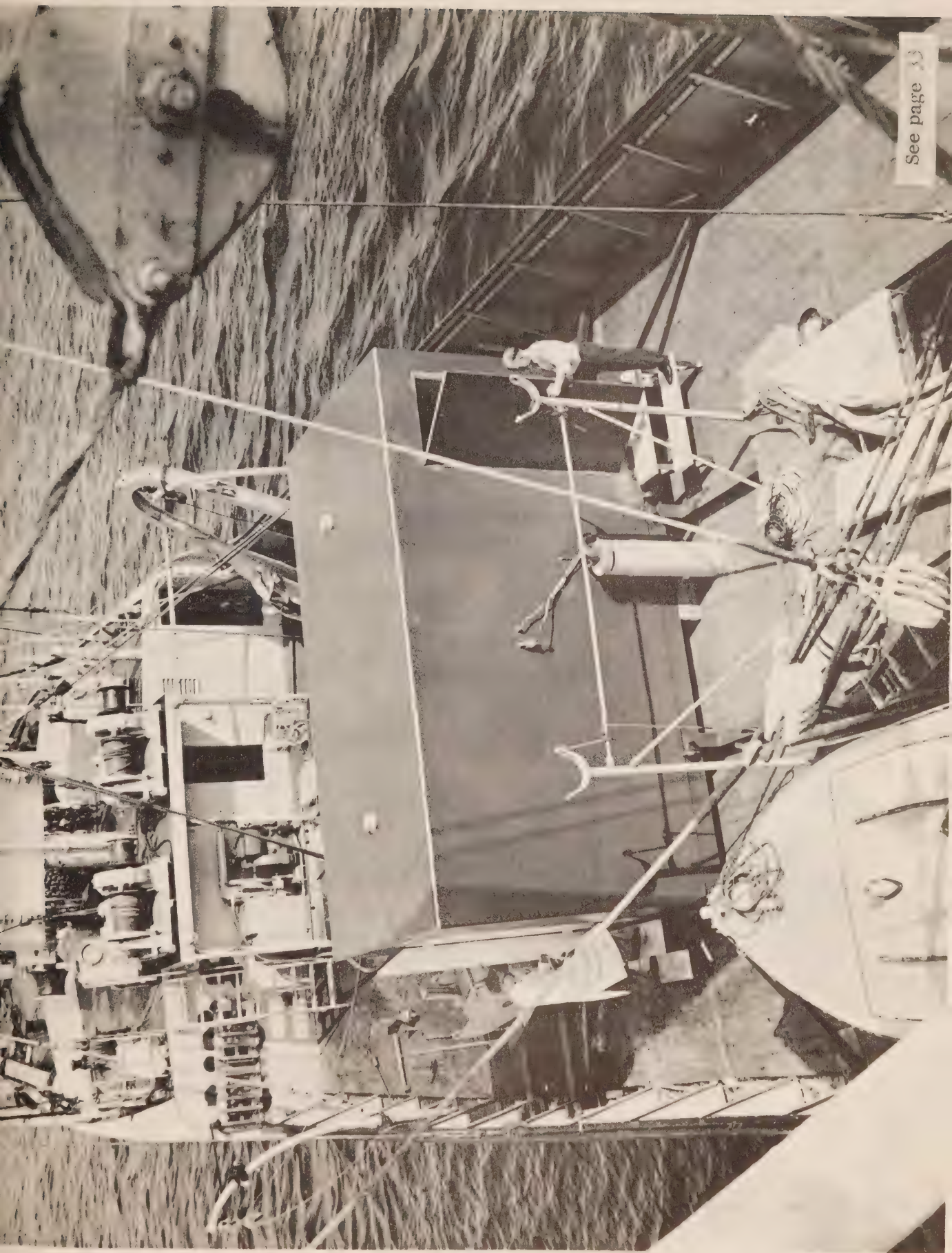
SECTION I

Description of data collection procedures

"CALANUS"



Fisheries Research Board



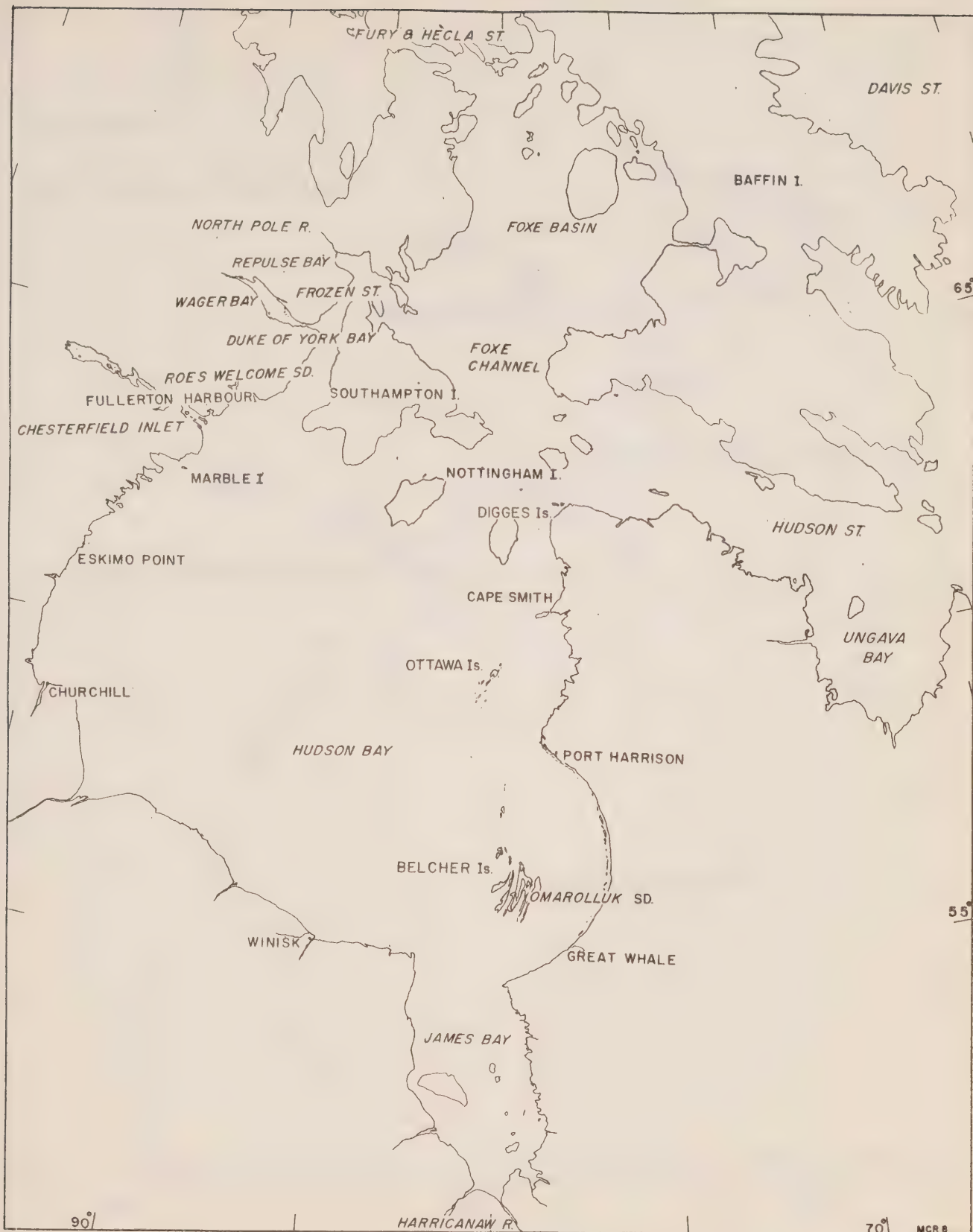


Figure 1.

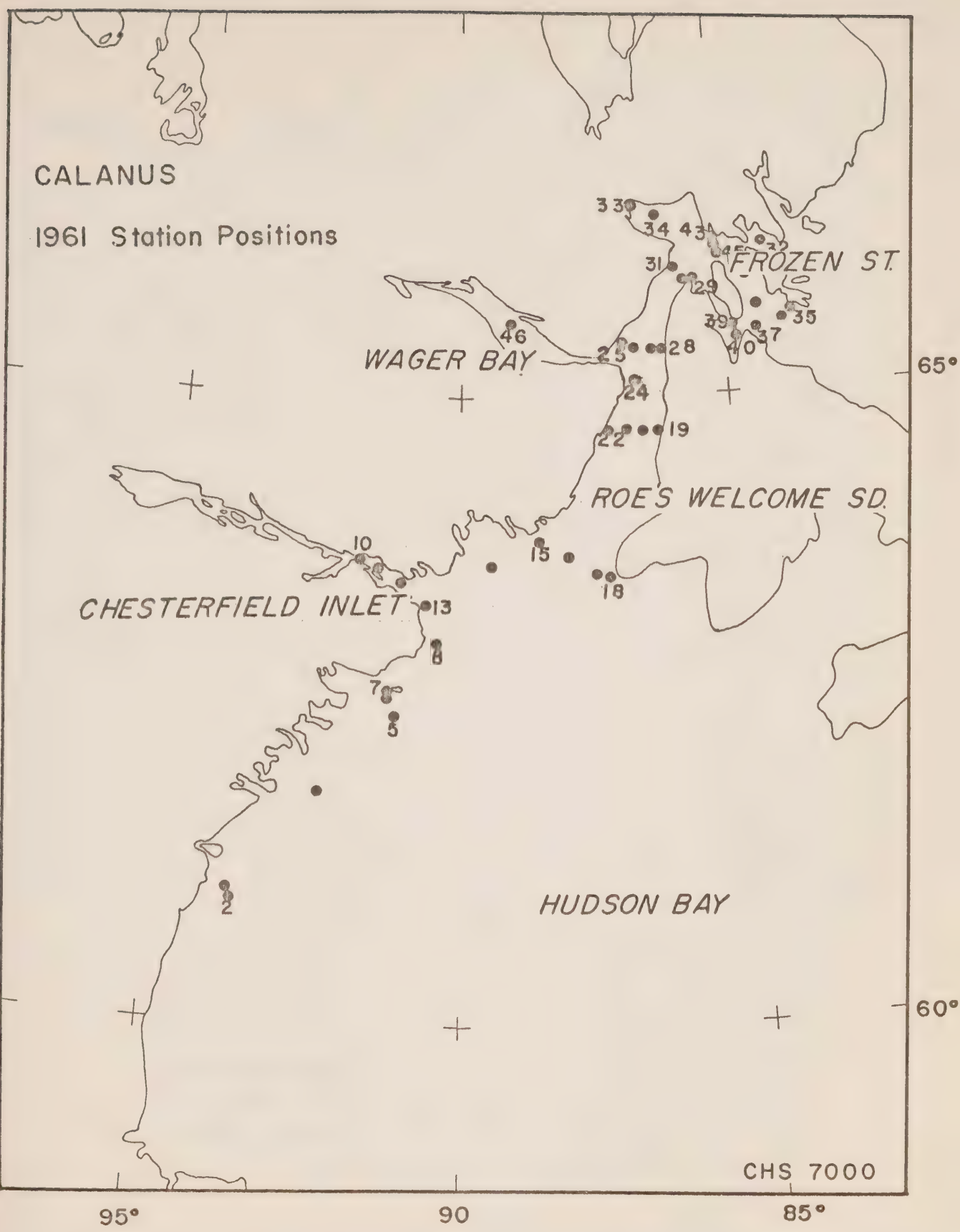


Figure 2.

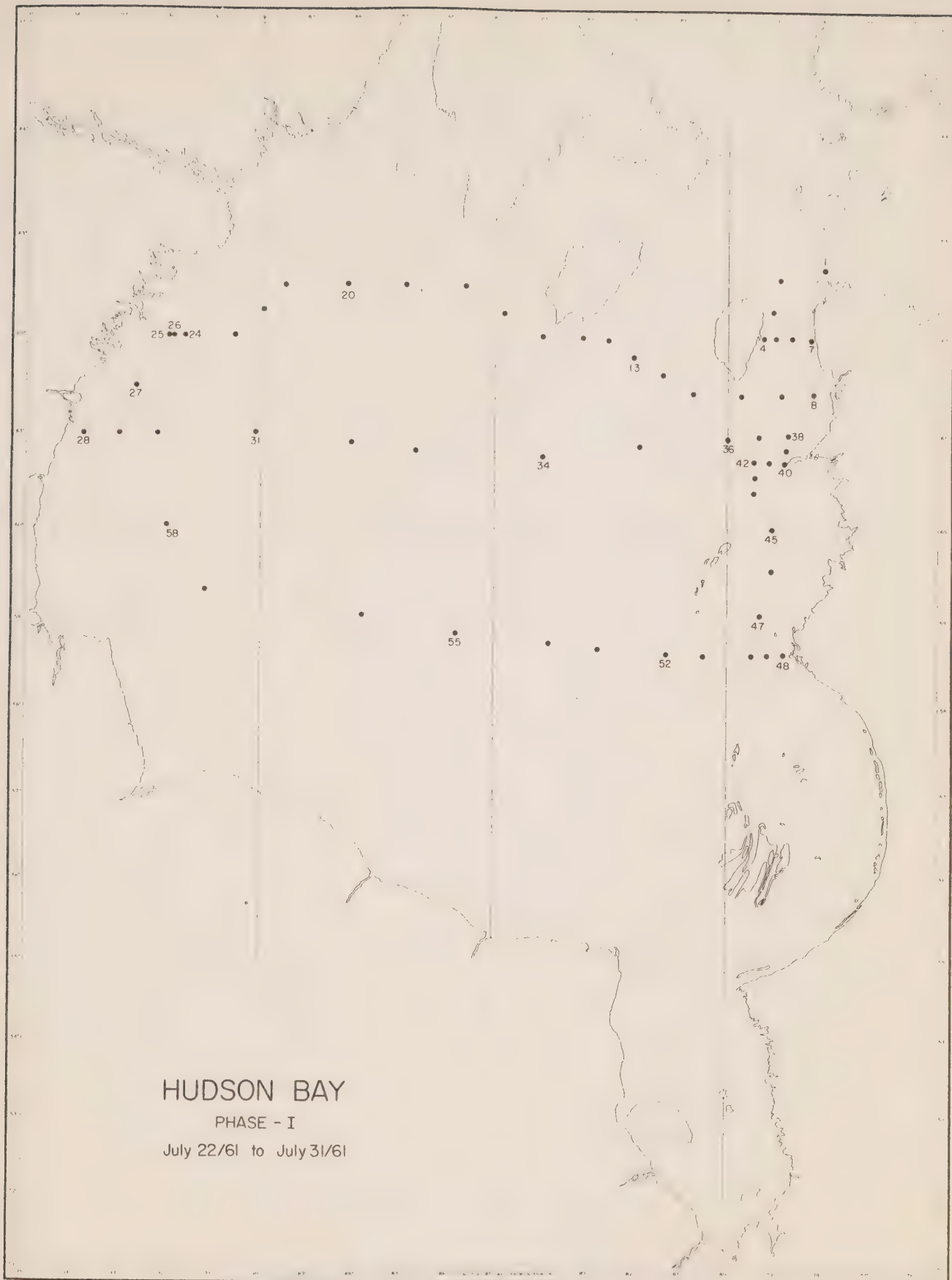


Figure 3.

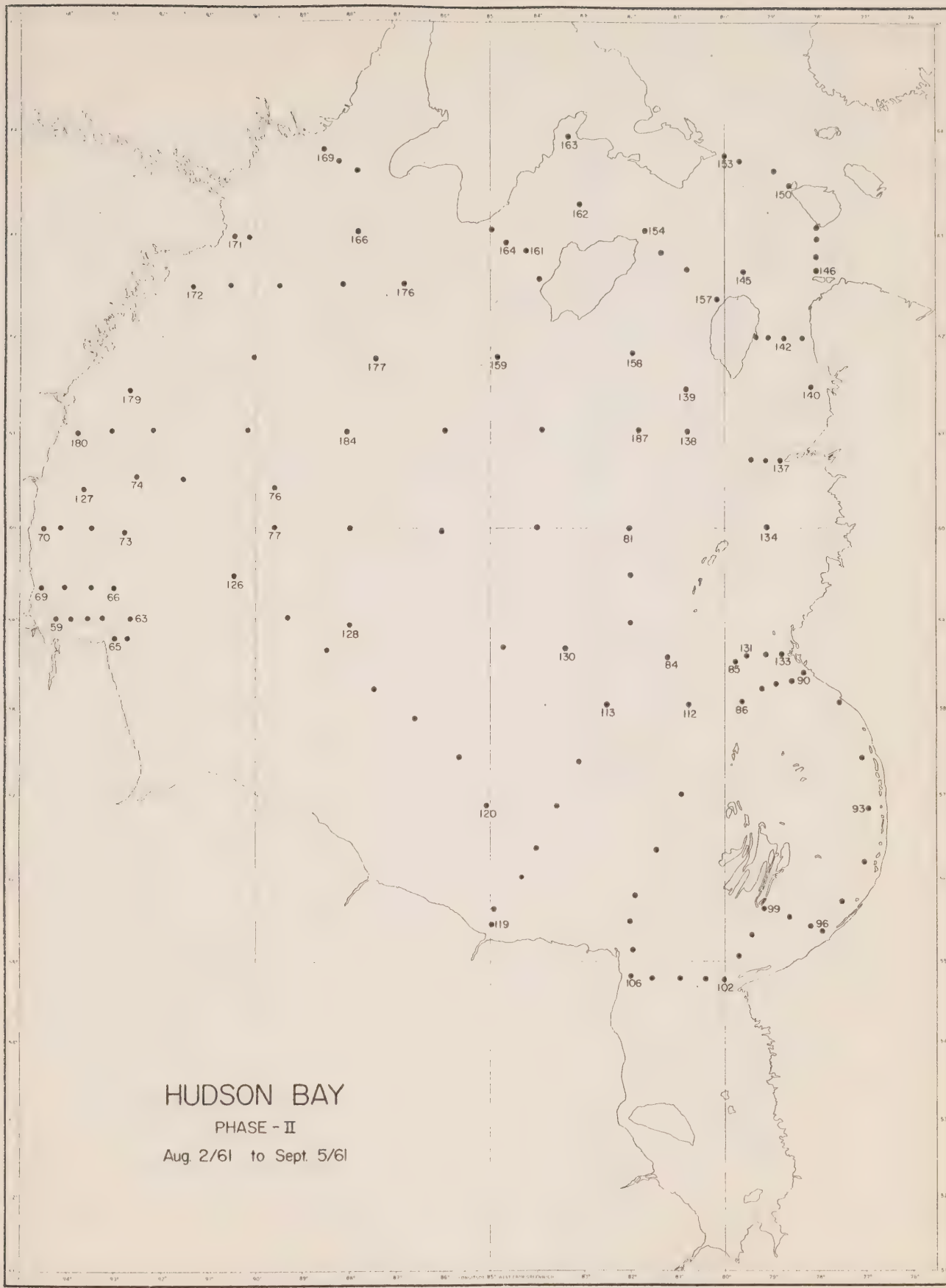


Figure 4.

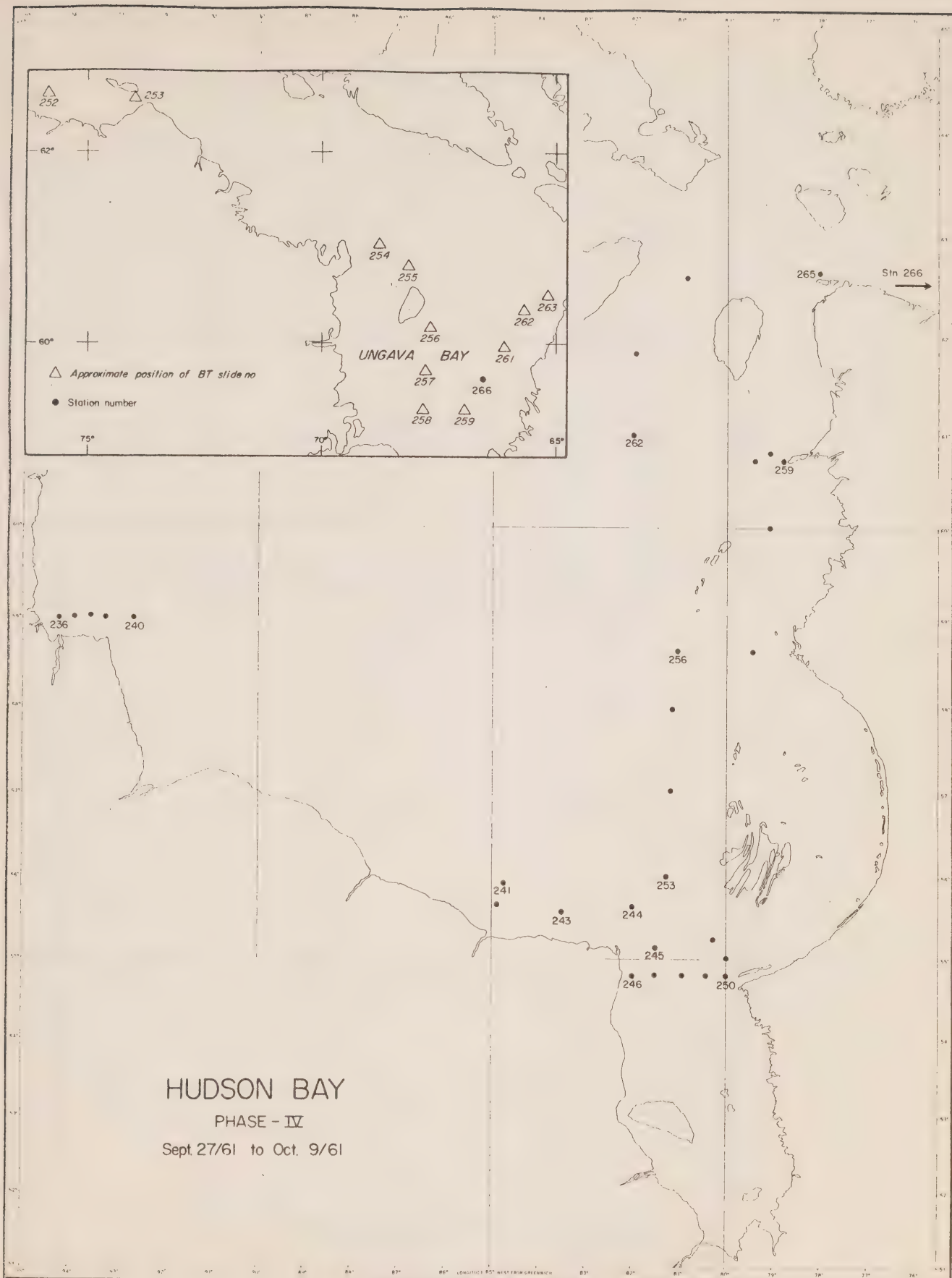


Figure 6.

Table I Calanus stations for serial data and the type of data.

Stn. No	Temp.	Sal.	O ₂	PO ₄	NO ₃	Stn. No.	Temp.	Sal.	C ₂	PO ₄	NO ₃
2	X	X	X	X	X	26	X	X	X		
3	X	X	X			27	X	X			
4	X	X	X	X		28	X	X	X		
5	X	X	X	X	X	29	X	X			
6	X	X	X			30	X	X	X	X	X
7*	X	X	X			31	X	X			
8	X	X	X	X		32	X	X	X	X	X
10	X	X	X	X	X	33	X	X	X		
11	X	X				34	X	X	X	X	X
12	X	X	X	X		35	X	X			
13	X	X				36	X	X	X	X	X
14	X	X	X	X	X	37	X	X	X	X	X
15	X	X	X			39	X	X	X	X	X
16	X	X	X			40	X	X	X	X	X
17	X	X	X			41	X	X	X	X	X
18	X	X	X			42	X	X	X	X	
19	X	X	X	X	X	43	X	X	X		
20	X	X	X	X		44	X	X			
21	X	X	X	X	X	45	X	X	X		
22	X	X	X	X		46	X	X	X	X	
24	X	X	X			21**	X	X	X		
25	X	X		X		6**	X	X	X		

* Station 7 was occupied in Knight Harbour,
Marble Island.

** a re-occupation of the earlier stations of
the same number.

Table II a. BT lowerings of Phase I (see Figure 3 for station positions).

<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>	<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>
1*	test	1115 21-VII	31	29	1300 26-VII
2	1	2300 22	32	30	1550 26
3	1	2325 22	33	31	2250 26
4	2	0235 23	34	32	0525 27
5	3	0530 23	35	33	1230 27
6	3	0535 23	36	34	2040 27
7	4	0810 23	37	35	0325 28
8	5	0915 23	38	36	0945 28
9	6	1044 23	39	37	1230 28
10	7	1230 23	40	38	1430 28
11	8	1610 23	41	39	1610 28
12	9	1955 23	42	40	1717 28
13	10	2140 23	43	41	1910 28
14	11	0130 24	44	42	2040 28
15	12	0430 24	45	43	2215 28
16	13	0740 24	46	44	2350 28
17	14	1010 24	47	45	0300 29
18	15	1150 24	48	46	0605 29
19	16	1450 24	49	47	0935 29
20	17	1815 24	50	48	1230 29
21	18	2200 24	51	49	1440 29
22	19	0240 25	52	50	1630 29
23	20	0700 25	53	51	2015 29
24	21	1122 25	54	52	2345 29
25	22	1400 25	55	53	0520 30
26	23	1940 25	56	54	0950 30
27	24	2300 25	57	55	1700 30
28	26	0045 26	58	56	0040 31
29	27	0515 26	59	57	1610 31
30	28	1000 26	60	58	2130 31

*61°15'N67°23'W.

Table II b. BT lowerings of Phase II (see Figure 4 for station positions).

<u>Slide No.</u>	<u>Sta. No.</u>	<u>G. M. T.</u>	<u>Slide No.</u>	<u>Sta. No.</u>	<u>G. M. T.</u>
61	59	0305 3-VIII	104	102	0110 11-VIII
62	60	0450 3	105	103	0325 11
63	61	0630 3	106	104	0615 11
64	62	0745 3	107	105	0925 11
65	63	1015 3	108	106	1130 11
66	64	1215 3	109	107	1430 11
67	65	1405 3	110	108	1645 11
68	66	1715 3	111	109	2130 11
69	67	1858 3	112	110	0215 12
70	68	2135 3	113	111	0730 12
71	69	2340 3	114	112	1420 12
72	70	0415 4	115	113	2120 12
73	71	0605 4	116	114	1300 13
74	72	0830 4	117	115	0710 13
75	73	1140 4	118	116	1120 13
76	74	1520 4	119	117	1455 13
77	75	1900 4	120	118	1745 13
78	76	0110 5	121	119	2000 13
79	77	0630 5	122	120	1830 14
80	78	1215 5	123	121	0130 15
81	79	1715 5	124	122	0725 15
82	80	0110 6	125	123	1230 15
83	81	0815 6	126	124	1745 15
84	82	1220 6	127	125	2230 15
85	83	1540 6	128	126	0330 16
86	84	1903 6	129	128	0530 21
87	85	0125 7	130	129	1700 21
88	86	1120 7	131	130	2110 21
89	87	1305 7	132	131	1156 22
90	88	1430 7	133	132	1335 22
91	89	1550 7	134	133	1500 22
92	90	1730 7	135	134	0400 23
93**	91	2324 8	136	135	1020 23
94	92	0445 9	137	136	1218 23
95	93	1345 9	138	137	1343 23
96	94	1825 9	139	138	2230 23
97	95	2015 9	140	139	0315 24
98	96	0250 10	141	140	1152 24
99	97	1125 10	142	141	1530 24
100**	98	1350 10	143	142	1700 24
101	99	1715 10	144	143	1900 24
102	100	1945 10	145	144	2010 24
103	101	2215 10	146	145	0120 25

Table II b. (Cont'd).

<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>	<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>
147	146	0715 25-VIII	168	167	0130 30-VIII
148	147	0907 25	169	168	0300 30
149	148	1100 25	170	169	0400 30
150	149	1300 25	171	170	1245 30
151	150	2126 25	172	171	1410 30
152	151	2330 25	173	172	1845 30
153	152	0350 26	174	173	2130 30
154	153	0530 26	175	174	0130 31
155	154	0100 26	176	175	0620 31
156	155	1610 26	177	176	1100 31
157	156	1830 26	178	177	1832 31
158	157	2145 26	179	178	0300 1 st IX
159	158	0440 27	180	179	1410 1
160	159	1400 27	181	180	2055 1
161	160	2110 27	182	181	2333 1
162	161	0025 28	183	182	0355 2
163	162	0525 28	184	183	1145 2
164	163	1035 29	185	184	1920 2
165	164	1005 29	186	185	0230 3
166	165	1200 29	187	186	0930 3
167	166	1945 29	188	187	1515 3

xx
Slide not available.

Table II c. BT lowerings of Phase III (see Figure 5 for station positions).

<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>	<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>
189**	188	1510 10-IX	205	216	2133 17
190	189	1830 10	206	217	0130 18
191	190	2130 10	207	219	0345 18
192	191	2330 10	208	220	1250 18
193	192	0250 11	209	221	1745 18
194	193	1530 11	210	222	0355 19
195	194	0040 12	211	223	0800 19
196	195	1450 13	212	224	1215 19
197	196	0040 14	213	225	1514 19
198	197	0410 14	214	226	1640 19
199	198	1100 14	215	227	1800 19
200	199	1230 14	216**	228	2255 19
201	200	1510 14	217	229	2355 19
202	210	0010 17	218**	230	0115 20
203	213	1215 17	219	232	0425 20
204	215	1745 17	220	233	0515 20

** Slide not available.

Table II d. BT lowerings of Phase IV (see Figure 6 for approximate positions).

<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>	<u>Slide No.</u>	<u>Stn. No.</u>	<u>G. M. T.</u>
221**	236	2310 27-IX	243	258	1230 4-X
222	237	0050 28	244	259	1730 6
223**	238	0245 28	245	259	1745 6
224**	239	0440 28	246	260	1900 6
225	240	0800 28	247	261	2050 6
226**	241	1025 1-X	248	262	0545 7
227**	242	1300 1	249	263	1230 7
228**	243	1857 1	250	264	2120 7
229	244	2355 1	251	265	0730 8
230	245	0310 2	252		1200 8
231	246	0545 2	253		1700 8
232**	247	0750 2	254		1245 9
233	248	1015 2	255		1450 9
234	249	1250 2	256		1925 9
235	250	1500 2	257		2155 9
236	251	1700 2	258		0030 10
237	252	1930 2	259		0315 10
238	253	0250 3	260	266	0600 10
239	254	1030 3	261		0930 10
240	255	1715 3	262		1230 10
241**	256	2210 3	263		1450 10
242	257	0355 4			

* * Slide not available.

INTRODUCTION

During the navigation season of 1961, a comprehensive oceanographic survey of Hudson Bay (Figure 1) was carried out in the motor vessels Calanus (frontispiece) and Theta. A portion of the observations in Theta, specifically the serial oceanographic data, have been reported (C.O.D.C. No. 1/1964 Series). The data herein consists of the serial data observed in Calanus and the bathythermograms* observed in Theta. The presentation is subject to modification and possible correction at a later date. The original records of Calanus are filed with the Fisheries Research Board, Arctic Biological Station, Montreal, while those of Theta with the Marine Sciences Branch, Ottawa.

An outline of the programme carried out in Theta was presented in the earlier report. In brief, after outfitting at Halifax, which included the installation of a portable laboratory (see plate), the vessel departed Halifax en route to Hudson Bay on July 15, and returned to Halifax on completion of the survey on October 15. The programme of observations began with station 1 south of Nottingham Island on July 22, on which date the first station for physical data was occupied by Calanus. The major portion of the programme in this vessel comprised biological sampling, and at a few stations this type of observation only was carried out. Stations occupied by Calanus at which physical data also were obtained are shown in Figure 2. Generally these comprised casts for temperature, salinity, and dissolved oxygen data, but as shown in Table I, additional observations for phosphate and nitrate determinations were made at certain stations.

*Bathythermograph lowerings were not made from Calanus.

THE CALANUS PROGRAMME

The Calanus (Dunbar, 1949) has been used extensively in Arctic waters in support of programmes of the Fisheries Research Board of Canada, and Grainger (1960) reported on an earlier investigation in this vessel into south eastern Hudson Bay and James Bay. The 1961 programme had been established, as with that for Theta, with members of the Department of Mines and Technical Surveys. It was decided that the survey in Calanus would extend along the northwest coast through Roes Welcome Sound to Frozen Strait. A summary of the activity is indicated here in that section titled "Extract of Cruise Log".

Personnel in M.V. Calanus comprised E.H. Grainger, B. Margetts, and A.F. Reed.

EXTRACT OF CRUISE LOG

July 20	Sailed from Churchill
21	Station 1
22	Station 2, off Eskimo Point
23	Station 3, off Eskimo Point
24	Station 4
25	Station 5, off Marble Island
26	Station 6 and 7, Marble Island
27	Station 8. Arrived Chesterfield Inlet
28-29	Station 9. Fishing in Chesterfield Inlet
30-31	Station 10-13, in Chesterfield Inlet
Aug. 1	Loaded fuel and water at Chesterfield
2	Station 14
3-5	At anchor in Fullerton Hbr. High winds and engine trouble.
6	Station 15-18, Roes Welcome Sound
7	Station 19-23, Roes Welcome Sound
8	At anchor south of Wagner Bay. Productivity experiments.
9	Station 24, Roes Welcome Sound
10	Station 25-28, Roes Welcome Sound
11	Station 29-31, Roes Welcome Sound. Anchored in Repulse Bay.
12	Sailed Repulse to Frozen Strait. Walrus hunting.
13	Frozen Strait. Seal hunting.
14	Station 32
15	Sailed to Repulse Bay
16-19	At anchor Repulse Bay. High winds.
20-21	North Pole River. Station 33. Fishing, productivity experiments, water loading.
22	Repulse Bay. Fuel loading.
23	Station 34
24	Stations 35-37, Frozen Strait
25-26	Duke of York Bay. Stations 38-40. Fishing

Aug. 27	Station 41 and 42, Frozen Strait
28	Station 43-45. Frozen Strait
29	Sailed to Wager Bay
30	Wager Bay. High winds
31	Station 46, Wager Bay
Sept. 1	Station 21 (repeat). Wind rising
2-4	Gale off Chesterfield. Damage and discomfort considerable.
5-8	At anchor at Chesterfield. Vessel repair, fuel and water loading. High winds continuing.
9-10	Marble Island. Productivity experiments. Station 6 (repeat).
11	Sailed towards Churchill. High winds.
12	Arrived Churchill

OBSERVATION AND LABORATORY PROCEDURES

Surface samples were obtained from a plastic bucket, surface temperatures being taken with a chemical thermometer. The tabulated temperatures at depth at each station were obtained from the reading of a Negretti and Zambra thermometer attached to a Nansen reversing water bottle. Analyses for dissolved oxygen, phosphate, and nitrate were carried out aboard. Salinity samples were drawn into standard storage bottles with patent stoppers fitted with rubber washers; the samples were determined later by titration at the Atlantic Oceanographic Group. Oxygen samples were drawn into 300-ml B.O.D. bottles, and analysed using the modified Winkler method described by Strickland et al (1960). Nitrates and phosphates were determined according to Strickland et al (op. cit.).

Plankton samples* were taken from vertically, obliquely, and horizontally towed nets with openings from one foot to two metres and meshes from No. 20 to stramin, and from a standard Clarke-Bumpus sampler. Quantitative phytoplankton samples (about 130 ml) were drawn from reversing bottles. Bottom fauna collecting was done with dredges, trawls and van Veen samplers. Primary productivity experiments were carried out in situ using carbon-14 and dark-light-bottle oxygen techniques.

BATHYTHERMOGRAPH DATA OF THETA

Bathythermograph lowerings were part of the routine programme of Theta so that for most stations this type of data is available. The presentation here follows that for the earlier record wherein the programme sub-divisions or phases are adhered to. The extent of the data and the relation of slide number, station number, and time is shown in Table II, and the approximate position of each station in Figures 3 to 6.

*Grainger (1963) discussed features of the distribution of three species of copepod utilizing these plankton samples as well as those obtained by Theta and other vessels.

The material is arranged in Section IV according to Phase number, but within each is grouped according to the depth range of the instrument used, each group in turn being arranged chronologically. The traces were drawn on pre-printed grids after suitable alignment in an adjustable holder. The number shown on the bathythermogram is the original slide number and relates the data to the presentation of Table II.

CAPTIONS AND TITLES

frontispiece	M.V. Calanus
plate	A view of M.V. Theta from the bridge forward showing the portable laboratory in position between the hatches.
Figure 1	Hudson Bay.
Figure 2	Calanus stations.
Figure 3	Theta stations, Phase I.
Figure 4	Theta stations, Phase II.
Figure 5	Theta stations, Phase III.
Figure 6	Theta stations, Phase IV.
Table I	Calanus stations for serial data and the type of data.
Table II	Theta BT lowerings for each Phase.

SECTION II

Description of the machine-generated data record

INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct image masters. These masters subsequently yield the required volume of copies for distribution.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFER-
ENCE NUMBER:

Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were occupied.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of

(4) LONGITUDE:

observation

(5) MARSDEN SQUARE: Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

CANADIAN OCEANOGRAPHIC DATA CENTRE

1 IDENT. CODE		2 LATITUDE (N = +)		3 LONGITUDE (W = +)		5 DATE		6 TIME		7 DEPTH		9 NO. DEPTHS OBS'D.		VESSEL	
COUNTRY	INST.	DEG. °	MIN.	1	10	DEG. °	MIN.	1	10	YEAR	MONTH	DAY	HOURS	G.M.T.	ENTERED BY
1	8														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	34 35

10 WATER		11 WAVES I		12 WAVES II		13 WIND		14 BAROMETER		15 AIR TEMP.		16 WET BULB		17 W.W. CODE		18 CLOUD		19 HOURS AFTER H.W.		21 UNASSIGNED		22 CRUISE REFERENCE NUMBER		23 CONSEC. NUMBER		24	
COLOUR	TRANS.	DW	DW	PW	HW	DW	PW	HW	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.	DIR.
1	8																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	

5 TIME		7 DEPTH OF SAMPLE		8 TEMPERATURE		9 SALINITY		10 OXYGEN		13 PO ₄ - P		14 TOTAL - P		15 NO ₂ - N		16 NO ₃ - N		17 SiO ₃ - Si		18 P.H.	
HOURS	G.M.T.	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1	10
1	8																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

- (9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.
It is reported to tenths of hours (Table 1).
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.
- (10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".
- (11) MAXIMUM
SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).
00 m - 50 m = 00
51 m - 150 m = 01
151 m - 250 m = 02
etc.
- (12) NUMBER OF
DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).
- (14) WATER
TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;
- NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.
- (15) WAVES 1
($d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.
- (18) WIND FORCE
(WND-FCF): Beaufort Notation (See Table 6).

WIND SPEED
(WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.
- (19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

- (20) AIR
TEMPERATURE: In degrees Celsius.
- (21) WET BULB: In degrees Celsius.
- (22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700
- (25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.
- (26) STATION: A station reference number, assigned by the institute prior to, or during the survey.
- (27) HOURS AFTER
HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO_4	(9) -P-	(10) NO_2	(11) NO_3	(12) SiO_3
				(13) pH.	

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

- (1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.
- When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.
- (2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.
- (3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section.
- (4) SALINITY: Salinity as defined by: $S = 0.03 + 1.805 C1\%$, reported in: 1/1000 parts per 1000.
- (5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.

- (6) SIGMA-T: The specific gravity anomaly as defined by: $(\text{Specific gravity} - 1) \times 10^3$ (e.g., σ_t reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).
- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs

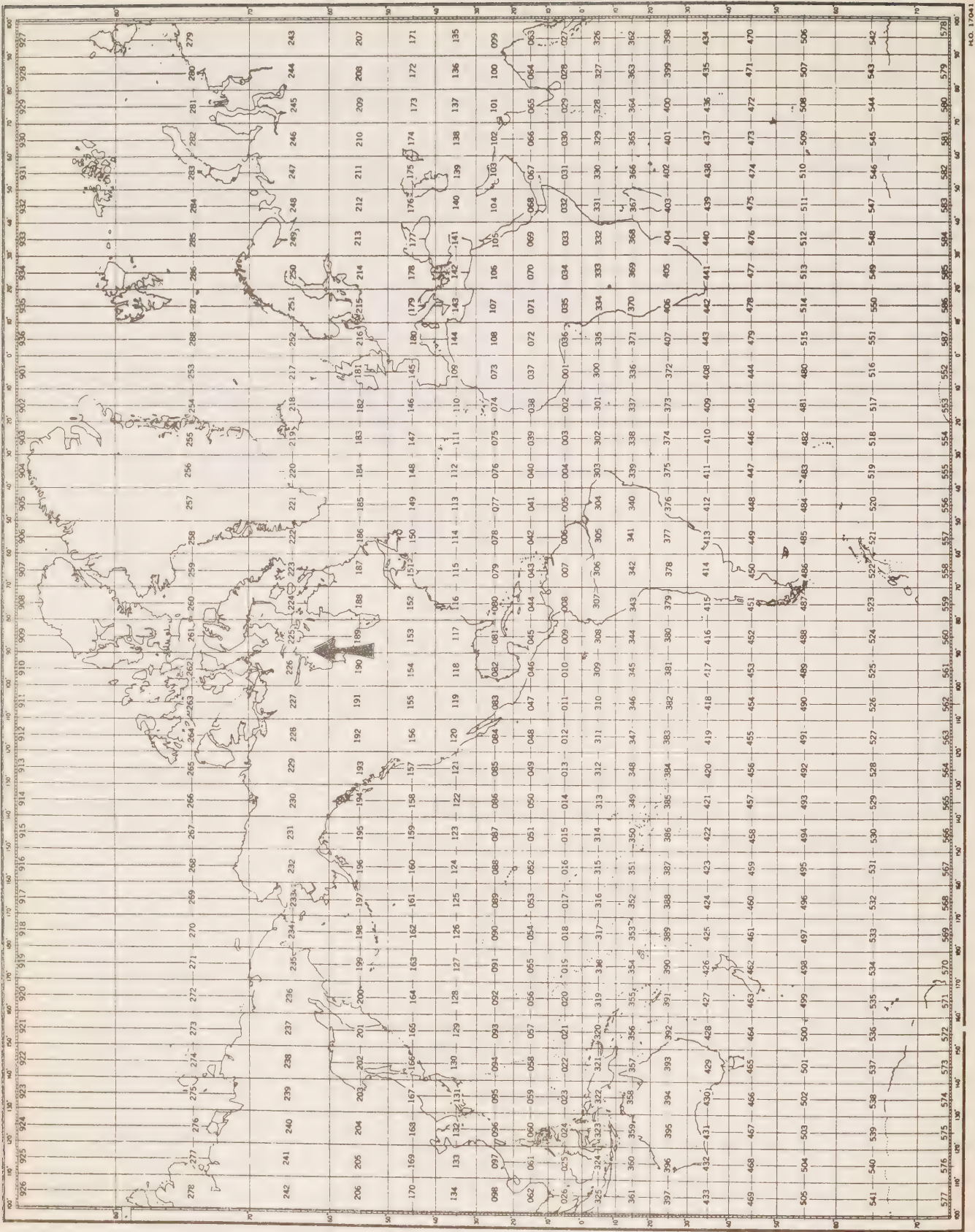
DOUBTFUL DATA CODES

The doubtful data are reported as follows:

Code	Doubtful Data
1	depth
2	temperature
3	salinity
4	any combination of 1, 2, and 3,
5	oxygen

NOTE: Codes 1 to 4 inclusive take precedence over code 5

Location of the doubtful data code is in the "Observed Data" portion, immediately to the left of the "GMT" column.



MARSDEN SQUARE CHART

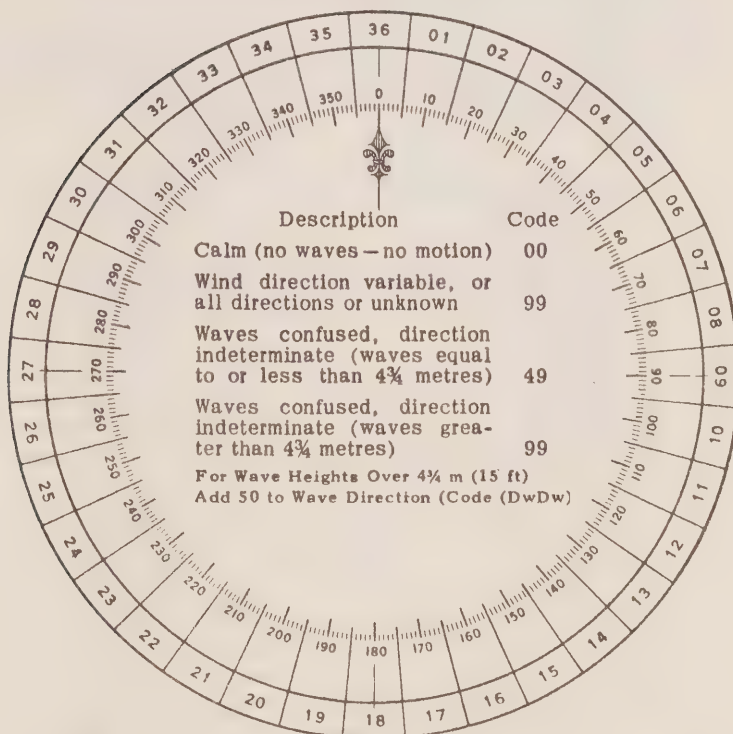
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)

(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Add
50
to
Dw Dw

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
Haze, dust, sand or smoke	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	
ww = 20 - 29			
	20	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	not falling as shower(s)
	21	Drizzle (not freezing) or snow grains	
	22	Rain (not freezing)	
	23	Snow	
	24	Rain and snow or ice pellets, type (a)	
	25	Freezing drizzle or freezing rain	
	26	Shower(s) of rain	
	27	Shower(s) of snow, or of rain and snow	
	28	Shower(s) of hail, or of rain and hail	
	29	Fog or ice fog	
	29	Thunderstorm (with or without precipitation)	
ww = 30 - 39			
	30	Duststorm, sandstorm, drifting or blowing snow	
	31	Slight or moderate duststorm or sandstorm	- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	32	Severe duststorm or sandstorm	
	33	Slight or moderate blowing snow	- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	34	Heavy drifting snow	
	35	Slight or moderate blowing snow	
	36	Heavy blowing snow	generally low (below eye level)
	37	Heavy drifting snow	generally high (above eye level)
	38	Slight or moderate blowing snow	
	39	Heavy blowing snow	
ww = 40 - 49			
	40	Fog or ice fog at the time of observation	
	41	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	42	Fog or ice fog in patches	
	43	Fog or ice fog, sky visible	has become thinner during the preceding hour
	44	Fog or ice fog, sky invisible	
	45	Fog or ice fog, sky visible	no appreciable change during the preceding hour
	46	Fog or ice fog, sky invisible	
	47	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
	48	Fog or ice fog, sky invisible	
	49	Fog, depositing rime, sky visible	
	49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| ww | | | |
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain | { | - slight |
| 88 | or rain and snow mixed | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | { | thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | { | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | | |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | { | thunderstorm at time of observation |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | { | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, dust storm, sand storm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50–200 metres (approx. 55–220 yards)
92	200–500 metres (approx. 220–550 yards)
93	500–1,000 metres (approx. 550 yards– $\frac{3}{4}$ n.m.)
94	1–2 km (approx. $\frac{3}{4}$ –1 n.m.)
95	2–4 km (approx. 1–2 n.m.)
96	4–10 km (approx. 2–6 n.m.)
97	10–20 km (approx. 6–12 n.m.)
98	20–50 km (approx. 12–30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

pertaining to
Serial Oceanographic data
in
SECTION III

<u>Institute:</u>	Arctic Unit - Montreal.
<u>Observation platform:</u>	M.V. "Calanus".
<u>Vessel's cruising speed:</u>	7 knots
<u>Total number of stations occupied:</u>	45
<u>Air temperature</u>	observed from a fixed thermometer.
<u>Surface sea water temperature</u>	obtained from a bucket sample using a chemical thermometer.

SECTION III

Serial oceanographic data

C-REF-NO 354 YR 1961 DEPTH 39 WAVES 1 00X0 AIR T 07.2 VIS
 CONS. NO 001 MONTH 7 MXSAMPD 00 WAVES 2 WET B STN 002
 LAT 61-00 N DAY 22 NO.DPTH 6 WND-DIR CALM WW-CODE
 LON 93-49 W HR 17.6 W-COLOR WND-SPD 00 CLD-TPE
 MARSD SQ 226 W-TRNSP BARO CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
180	0000	0660	3032	785	2381	14713	070		065		
181	0005	0589	3032	682	2390	14685	150		070		
181	0010	0365	3108	837	2473	14603	090		041		
181	0020	0270	3144	838	2510	14568	130		031		
176	0030	0247	3167	839	2530	14563	100		037		
176	0035	0232	3169	655	2532	14557	120		030		

C-REF-NO 354 YR 1961 DEPTH 13 WAVES 1 00X0 AIR T 09.9 VIS
 CONS. NO 002 MONTH 7 MXSAMPD 00 WAVES 2 WET B STN 003
 LAT 61-05 N DAY 23 NO.DPTH 6 WND-DIR CALM WW-CODE
 LON 93-54 W HR 19.0 W-COLOR WND-SPD 00 CLD-TPE
 MARSD SQ 226 W-TRNSP BARO CLD-AMT 2 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
199	0000	0754	3028	786	2366	14750					
199	0001	0628	3039	824	2391	14701					
198	0003	0599	3032	796	2389	14689					
198	0005	0616	3037	806	2391	14697					
198	0007	0493	3061	840	2423	14650					
190	0010	0364	3097	854	2464	14601					

C-REF-NO 354	YR 1961	DEPTH 50	WAVES 1 00X0	AIR T 08.3	VIS
CONS. NO 003	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 004
LAT 61-52 N	DAY 24	NO.DPTH 6	WND-DIR CALM	WW-CODE	
LON 92-20 W	HR 21.1	W-COLOR	WND-SPD 00	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
214	0000	0530	3155	847	2493	14677	100					
214	0005	0370	3167	846	2519	14612	090					
214	0010	0308	3178	835	2534	14587	100					
211	0020	0285	3183	835	2539	14580	080					
211	0030	0266	3194	870	2550	14575	090					
211	0046	0232	3203	951	2560	14564	090					

C-REF-NO 354	YR 1961	DEPTH 70	WAVES 1 00X0	AIR T 05.5	VIS
CONS. NO 004	MONTH 7	MXSAMPD 01	WAVES 2	WET B	STN 005
LAT 62-30 N	DAY 25	NO.DPTH 7	WND-DIR CALM	WW-CODE	
LON 91-05 W	HR 18.8	W-COLOR	WND-SPD 00	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
194	0000	0850	2882	748	2239	14768	050			041		
192	0005	0760	2902	753	2267	14737	060			048		
192	0010	0315	3171	847	2527	14590	070			029		
192	0020	0213	3191	732	2551	14549	120			019		
188	0030	0047	3218	867	2583	14480	050			024		
188	0050	-0099	3252	730	2617	14421	120			100		
188	0065	-0110	3256	672	2620	14419	140			074		

C-REF-NO 354	YR 1961	DEPTH 11	WAVES 1	XX	AIR T 07.2	VIS
CONS. NO 005	MONTH 7	MXSAMPD 00	WAVES 2		WET B	STN 006
LAT 62-40 N	DAY 26	NO.DPTH 6	WND-DIR 180		WW-CODE 44	
LON 91-12 W	HR 19.0	W-COLOR	WND-SPD 05		CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO		CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
194	0000	0547	2988	783	2360	14661					
194	0001	0546	2988	808	2360	14661					
194	0003	0538	2988	803	2361	14658					
190	0005	0536	2988	848	2361	14658					
190	0007	0525	2988	922	2362	14654					
190	0010	0447	3007	860	2385	14624					

C-REF-NO 354	YR 1961	DEPTH 35	WAVES 1	00XX	AIR T 07.2	VIS
CONS. NO 006	MONTH 7	MXSAMPD 00	WAVES 2		WET B	STN 007
LAT 62-40 N	DAY 26	NO.DPTH 4	WND-DIR CALM		WW-CODE	
LON 91-12 W	HR 22.4	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
229	0000	0761	2936	783	2293	14741					
228	0010	0479	2996	770	2373	14636					
226	0020	0001	3155	868	2535	14449					
224	0030	-0156	3263	644	2627	14392					

C-REF-NO 354	YR 1961	DEPTH 48	WAVES 1 00XX	AIR T 07.2	VIS
CONS. NO 007	MONTH 7	MXSAMPC 00	WAVES 2	WET B	STN 008
LAT 63-04 N	DAY 27	NO.DPTH 6	WND-DIR CALM	WW-CODE	
LON 90-24 W	HR 20.2	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
205	0000	0850	2682	783	2083	14743	080					
205	0005	0813	2665	817	2074	14727	070					
205	0010	0481	2732	856	2165	14602	060					
202	0020	0066	3099	769	2487	14471	130					
202	0030	-0108	3257	703	2621	14414	130					
202	0045	-0129	3281	691	2641	14410	150					

C-REF-NO 354	YR 1961	DEPTH 80	WAVES 1 XX	AIR T 02.7	VIS
CONS. NO 008	MONTH 7	MXSAMPC 01	WAVES 2	WET B	STN 010
LAT 63-43 N	DAY 30	NO.DPTH 7	WND-DIR 270	WW-CODE	
LON 91-43 W	HR 15.3	W-COLOR	WND-SPD 04	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NC3	SIO	PH
158	0000	0330	2001	815	1598	14439	070			077		
158	0005	0327	2117	824	1690	14453	070			085		
158	0010	0292	2167	819	1731	14445	050			086		
158	0020	0186	2445	790	1958	14436	100			088		
153	0027	0152	2582	789	2069	14441	050			089		
153	0046	0108	2739	781	2196	14445	080			087		
153	0073	0088	2794	785	2241	14448	110			094		

C-REF-NO 354	YR 1961	DEPTH 55	WAVES 1 00XX	AIR T 06.1	VIS
CONS. NO 009	MONTH 7	MXSAMPD 00	WAVES 2	WET B	STN 011
LAT 63-39 N	DAY 30	NO.DPTH 6	WND-DIR CALM	WW-CODE	
LON 91-27 W	HR 21.2	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
213	0000	0300	2281		1821	14462					
213	0005	0234	2393		1914	14449					
213	0010	0214	2481		1985	14452					
213	0020	0163	2586		2071	14445					
212	0030	0158	2627		2104	14450					
212	0050	0067	2759		2214	14430					

C-REF-NO 354	YR 1961	DEPTH 115	WAVES 1 00X0	AIR T 01.1	VIS
CONS. NO 010	MONTH 7	MXSAMPD C1	WAVES 2	WET B	STN 012
LAT 63-33 N	DAY 31	NO.DPTH 8	WND-DIR CALM	WW-CODE	
LON 91-02 W	HR 14.2	W-COLOR	WND-SPD 00	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
147	0000	0190	2754	810	2204	14477	130				
147	0005	0154	2792	803	2236	14466	100				
147	0010	0123	2866	794	2297	14463	090				
147	0020	0089	2949	792	2365	14461	140				
147	0030	0061	2972	783	2385	14453	110				
142	0050	0061	3008	790	2414	14461	130				
142	0075	0028	3079	758	2472	14460	120				
142	0100	0005	3136		2519	14461	110				

C-REF-NO 354	YR 1961	DEPTH 76	WAVES 1 00X0	AIR T 16.1	VIS
CONS. NO 011	MONTH 7	MXSAMP C1	WAVES 2	WET B	STN 013
LAT 63-21 N	DAY 31	NO.DPTH 7	WND-DIR CALM	WW-CODE	
LON 90-37 W	HR 19.9	W-COLOR	WND-SPD 00	CLD-TPE	
MARSD SQ 226		W-TRNSP	BARO	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
201	0000	0300	2803		2236	14532						
202	0005	0159	2859		2290	14478						
201	0010	0111	2945		2361	14469						
201	0020	0092	3072		2464	14479						
199	0030	0086	3102		2488	14482						
199	0050	0036	3155		2533	14470						
199	0070	-0003	3189		2562	14460						

C-REF-NO 354	YR 1961	DEPTH 68	WAVES 1 XX	AIR T 03.8	VIS
CONS. NO 012	MONTH 8	MXSAMP C1	WAVES 2	WET B	STN 014
LAT 63-40 N	DAY 02	NO.DPTH 6	WND-DIR 200	WW-CODE	
LON 89-27 W	HR 20.3	W-COLOR	WND-SPD 03	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT 0	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
207	0000	0900	3095	910	2398	14815	110			078		
208	0010	0689	3109	902	2438	14737	150			073		
207	0020	0249	3227	858	2577	14570	110			076		
207	0030	-0024	3261	829	2621	14454	220			071		
203	0050	-0102	3284	760	2643	14424	180			099		
203	0062	-0109	3286	746	2644	14423	210			101		

C-REF-NO 354	YR 1961	DEPTH 44	WAVES 1	XX	AIR T 06.6	VIS
CONS. NO 013	MONTH 8	MXSAMPD 00	WAVES 2		WET B	STN 015
LAT 63-52 N	DAY 06	NO.DPTH 5	WND-DIR 340		WW-CODE	
LON 88-37 W	HR 14.7	W-COLOR	WND-SPD 05		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
147	0000	0340	3243	780	2582	14608						
147	0010	0307	3243	790	2585	14596						
147	0020	0267	3243	801	2589	14580						
147	0030	0249	3243	787	2590	14574						
147	0040	0150	3252	814	2605	14533						

C-REF-NO 354	YR 1961	DEPTH 137	WAVES 1	XX	AIR T 07.2	VIS
CONS. NO 014	MONTH 8	MXSAMPD 01	WAVES 2		WET B	STN 016
LAT 63-44 N	DAY 06	NO.DPTH 8	WND-DIR 320		WW-CODE	
LON 88-03 W	HR 18.3	W-COLOR	WND-SPD 03		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
188	0000	0430	3223		2558	14644						
187	0010	0410	3210		2550	14635						
187	0020	0333	3223		2567	14606						
187	0030	0072	3243		2602	14495						
187	0050	-0053	3275		2634	14445						
183	0075	-0120	3295		2652	14421						
183	0100	-0115	3313		2666	14430						
183	0130	-0114	3328		2679	14438						

C-REF-NO 354	YR 1961	DEPTH	57	WAVES 1	XX	AIR T 04.4	VIS
CONS. NO 015	MONTH 8	MXSAMPC	CO	WAVES 2		WET B	STN 017
LAT 63-37 N	DAY 06	NO.DPTH	5	WND-DIR	320	WW-CODE	
LON 87-33 W	HR 21.3	W-COLOR		WND-SPD	02	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
213	0000	0500	3209	757	2539	14671					
213	0010	0484	3209	762	2541	14666					
213	0020	0387	3221	774	2561	14629					
213	0030	0262	3232	790	2580	14578					
213	0050	-0035	3279	773	2636	14454					

C-REF-NO 354	YR 1961	DEPTH	5	WAVES 1	00XX	AIR T 03.8	VIS
CONS. NO 016	MONTH 8	MXSAMPC	00	WAVES 2		WET B	STN 018
LAT 63-34 N	DAY 06	NO.DPTH	2	WND-DIR	CALM	WW-CODE	
LON 87-20 W	HR 23.7	W-COLOR		WND-SPD		CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
238	0000	0620	3216		2531	14721					
237	0004	0586	3220		2538	14709					

C-REF-NO 354	YR 1961	DEPTH 13	WAVES 1	XX	AIR T 02.2	VIS
CONS. NO 017	MONTH 8	MXSAMPD 00	WAVES 2		WET B	STN 019
LAT 64-43 N	DAY 07	NO.DPTH 3	WND-DIR 320		WW-CODE	
LON 86-21 W	HR 12.8	W-COLOR	WND-SPD 02		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
128	CCCC	C600		716			120			081		
128	0005	0599	3194	721	2516	14711	110			074		
128	0010	0411	3201	781	2542	14635	090			080		

C-REF-NO 354	YR 1961	DEPTH 117	WAVES 1	00X0	AIR T 06.6	VIS
CONS. NO 018	MONTH 8	MXSAMPD 01	WAVES 2		WET B	STN 020
LAT 64-43 N	DAY 07	NO.DPTH 8	WND-DIR CALM		WW-CODE	
LON 86-37 W	HR 15.4	W-COLOR	WND-SPD 00		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
158	CCCC	C600	3173		2500	14708						
157	C01C	C496	3194		2528	14669						
157	C020	C448	3205		2542	14652						
157	0030	C297	3220		2568	14592						
157	0050	C024	3256		2615	14478						
154	0075	-0003	3297		2649	14476						
154	0100	-C079	3326		2676	14449						
154	0110	-C113	3340		2688	14436						

C-REF-NO 354 YR 1961 DEPTH 80 WAVES 1 00X0 AIR T 02.2 VIS
 CONS. NO 019 MONTH 8 MXSAMPD C1 WAVES 2 WET B STN 021
 LAT 64-43 N DAY 07 NO.DPTH 6 WND-DIR CALM WW-CODE
 LON 86-57 W PR 17.4 W-COLOR WND-SPD CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
178	0000	0660	3203	764	2516	14736	090			075		
177	0010	0387	3229	801	2567	14628	070			075		
177	0020	0305	3232	815	2577	14595	150			079		
177	0030	0236	3248	822	2595	14569				079		
174	0050	0160	3263	846	2613	14541	190			079		
174	0075	0074	3292	730	2641	14510	310			080		

C-REF-NO 354 YR 1961 DEPTH 24 WAVES 1 XX AIR T 04.9 VIS
 CONS. NO 020 MONTH 8 MXSAMPD C0 WAVES 2 WET B STN 022
 LAT 64-43 N DAY 07 NO.DPTH 3 WND-DIR 320 WW-CODE
 LON 87-18 W PR 20.2 W-COLOR WND-SPD 03 CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NC3	SIO	PH
202	0000	0420	3238		2571	14642						
202	0010	0373	3238		2575	14623						
202	0020	0355	3243		2581	14618						

C-REF-NO 354	YR 1961	DEPTH 44	WAVES 1	XX	AIR T 05.6	VIS
CONS. NO 021	MONTH 8	MXSAMPD CO	WAVES 2		WET B	STN 024
LAT 65-07 N	DAY 09	NO.DPTH 5	WND-DIR 180		WW-CODE	
LON 86-45 W	HR 19.6	W-COLOR	WND-SPD 05		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
197	0000	C240	3225	819	2576	14563	090					
196	0010	0243	3229	817	2579	14566	090					
196	0020	C238	3229	817	2580	14566	130					
196	0030	C242	3229	817	2580	14569	080					
196	0040	C230	3229	817	2580	14565	100					

C-REF-NO 354	YR 1961	DEPTH 43	WAVES 1	XX	AIR T 01.1	VIS
CONS. NO 022	MONTH 8	MXSAMPD CO	WAVES 2		WET B	STN 025
LAT 65-26 N	DAY 10	NO.DPTH 5	WND-DIR 360		WW-CODE	
LON 86-58 W	HR 14.6	W-COLOR	WND-SPD 06		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
146	0000	0370	3198		2544	14615						
146	0010	0277	3225		2574	14580						
146	0020	C268	3227		2576	14578						
146	0030	C264	3229		2578	14579						
146	0035	C252	3229		2579	14574						

C-REF-NO 354	YR 1961	DEPTH 74	WAVES 1 00XX	AIR T 01.6	VIS
CONS. NO 023	MONTH 8	MXSAMPD C1	WAVES 2	WET B	STN 026
LAT 65-24 N	DAY 10	NO.DPTH 6	WND-DIR 990	WW-CODE	
LON 86-44 W	HR 15.9	W-COLOR	WND-SPD 03	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
162	0000	0550	3214	757	2538	14693						
162	0010	0255	3243	805	2590	14573						
162	0020	0227	3248	803	2596	14563						
162	0030	0197	3248	810	2598	14552						
159	0050	0196	3254	815	2603	14555						
159	0072	0178	3254	807	2604	14551						

C-REF-NO 354	YR 1961	DEPTH 65	WAVES 1 XX	AIR T 02.7	VIS
CONS. NO 024	MONTH 8	MXSAMPD C1	WAVES 2	WET B	STN 027
LAT 65-22 N	DAY 10	NO.DPTH 6	WND-DIR 250	WW-CODE	
LON 86-27 W	HR 18.4	W-COLOR	WND-SPD 07	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
187	0000	0540	3214		2539	14689						
186	0010	0305	3247		2589	14596						
186	0020	0259	3252		2597	14578						
186	0030	0219	3261		2607	14563						
184	0050	0171	3270		2617	14547						
184	0060	0159	3272		2620	14543						

C-REF-NO 354	YR 1961	DEPTH 50	WAVES 1	XX	AIR T 03.3	VIS
CONS. NO 025	MONTH 8	MXSAMPC 00	WAVES 2		WET B	STN 028
LAT 65-22 N	DAY 10	NO.DPTH 5	WND-DIR 270		WW-CODE	
LON 86-13 W	HR 19.6	W-COLCR	WND-SPD 07		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
197	0000	0600		746								
196	0010	0556	3205	762	2530	14696						
196	0020	0424	3221	796	2557	14644						
196	0030	0351	3230	799	2571	14616						
196	0045	0304	3245	876	2587	14601						

C-REF-NO 354	YR 1961	DEPTH 67	WAVES 1	XX	AIR T -02.7	VIS
CONS. NO 026	MONTH 8	MXSAMPC 01	WAVES 2		WET B	STN 029
LAT 65-56 N	DAY 11	NO.DPTH 6	WND-DIR 290		WW-CODE	
LON 85-35 W	HR 06.2	W-COLCR	WND-SPD 06		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
064	0000	0130	3247		2602	14517						
064	0010	0141	3247		2601	14523						
064	0020	0149	3248		2601	14529						
064	0030	0141	3250		2603	14527						
062	0050	0153	3250		2603	14536						
062	0060	0146	3250		2603	14534						

C-REF-NO 354	YR 1961	DEPTH	55	WAVES 1	XX	AIR T -02.7	VIS
CONS. NO 027	MONTH 8	MXSAMPD	00	WAVES 2		WET B	STN 030
LAT 65-59 N	DAY 11	NO.DPTH	5	WND-DIR	270	WW-CODE	
LON 85-45 W	HR 07.6	W-COLOR		WND-SPD	06	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
076	CCCC	0110	3259	828	2613	14510	060		089		
076	001C	0119	3261	838	2614	14515	040		080		
076	002C	0082	3272	826	2625	14502	070		093		
082	0030	0075	3272	819	2625	14500	080		086		
082	0050	0073	3272	826	2625	14503	100		095		

C-REF-NO 354	YR 1961	DEPTH	12	WAVES 1	XX	AIR T -01.1	VIS
CONS. NO 028	MONTH 8	MXSAMPD	00	WAVES 2		WET B	STN 031
LAT 66-01 N	DAY 11	NO.DPTH	3	WND-DIR	360	WW-CODE	
LON 85-55 W	HR 10.3	W-COLOR		WND-SPD	08	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
103	0000	0180	3241		2594	14538					
103	0005	0176	3248		2600	14538					
103	001C	0163	3252		2604	14534					

C-REF-NO 354	YR 1961	DEPTH 165	WAVES 1 00X0	AIR T 00.5	VIS
CONS. NO 029	MONTH 8	MXSAMPD C1	WAVES 2	WET B	STN 032
LAT 66-11 N	DAY 14	NO.DPTH 8	WND-DIR CALM	WW-CODE	
LON 84-12 W	HR 21.2	W-COLOR	WND-SPD 00	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
217	0000	CC90	3129	872	2510	14483	070		081		
217	0010	CC56	3135	883	2516	14470	070		082		
217	0020	-CC17	3178	890	2554	14444	070		079		
217	0030	-0016	3209	943	2579	14450	080		087		
217	0050	-CC25	3225	764	2592	14451	090		098		
212	0075	-CC42	3245	839	2609	14450	110		101		
212	0100	-C053	3268	873	2628	14453	120		081		
212	0150	-C092		843			120		084		

C-REF-NO 354	YR 1961	DEPTH 15	WAVES 1 00XX	AIR T	VIS
CONS. NO C30	MONTH 8	MXSAMPD C0	WAVES 2	WET B	STN 033
LAT 66-32 N	DAY 20	NO.DPTH 5	WND-DIR CALM	WW-CODE	
LON 86-43 W	HR 18.6	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
188	0001	C089	3205	828	2571	14493					
186	0003	C081	3239	815	2598	14494					
186	0005	C074	3254	824	2611	14493					
186	0007	C075	3254	810	2611	14494					
186	0010	C058	3263	821	2619	14488					

C-REF-NO 354	YR 1961	DEPTH	95	WAVES 1	XX	AIR T -04.4	VIS
CONS. NO C31	MONTH 8	MXSAMPD	C1	WAVES 2		WET B	STN 034
LAT 66-28 N	DAY 23	NO.DPTH	6	WND-DIR	320	WW-CODE	
LON 86-16 W	HR 08.9	W-COLOR		WND-SPD	12	CLD-TPE	
MARSC SQ 225		W-TRNSP		BARO		CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
092	0000	C050	3261	829	2618	14483	100				084	
092	0010	C063	3263	819	2619	14490	090				086	
092	0020	C058	3263	831	2619	14490	090				092	
092	0030	C053	3263	817	2619	14489						
089	0050	C067	3265	817	2620	14499	090				084	
089	0085	-C012	3279	810	2635	14471	110				115	

C-REF-NO 354	YR 1961	DEPTH	155	WAVES 1	XX	AIR T -04.9	VIS
CONS. NO C32	MONTH 8	MXSAMPD	C1	WAVES 2		WET B	STN 035
LAT 65-36 N	DAY 24	NO.DPTH	8	WND-DIR	360	WW-CODE	
LON 83-45 W	HR 12.8	W-COLOR		WND-SPD	04	CLD-TPE	
MARSC SQ 225		W-TRNSP		BARO		CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
130	0000	C000	3090		2483	14436						
130	0010	-C041	3091		2485	14419						
130	0020	-C033	3104		2495	14426						
130	0030	C060	3146		2525	14476						
130	0050	-C032	3216		2585	14447						
128	0075	-C094	3279		2638	14431						
128	0100	-C098	3294		2651	14435						
128	0140	-C126	3315		2668	14432						

C-REF-NO 354	YR 1961	DEPTH		WAVES 1	AIR T	VIS
CONS. NO 033	MONTH 8	MXSAMPD	00	WAVES 2	WET B	STN 035
LAT 65-36 N	DAY 24	NO.DPTH	4	WND-DIR	WW-CODE	
LON 83-45 W	HR 13.2	W-COLOR		WND-SPD	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
134	0025	0056										
132	0029	0062										
132	0030	0053										
134	0035	-0043										

C-REF-NO 354	YR 1961	DEPTH	271	WAVES 1	XX	AIR T -04.4	VIS
CONS. NO 034	MONTH 8	MXSAMPD	03	WAVES 2		WET B	STN 036
LAT 65-32 N	DAY 24	NO.DPTH	9	WND-DIR	320	WW-CODE	
LON 83-55 W	HR 14.8	W-COLOR		WND-SPD	05	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT	0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGLN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
153	0000	0110	3122	827	2503	14491	120			091		
153	0010	0062	3122	833	2505	14471	090			099		
153	0020	0023	3156	846	2535	14459	070			093		
153	0030	-0014	3225	836	2592	14453	090			096		
153	0050	-0093	3281	801	2640	14428	100			124		
148	0075	-0102	3294		2651	14429						
148	0100	-0100	3301	783	2656	14435	130			130		
148	0200	-0150	3337	765	2687	14433	130			140		
148	0265	-0170	3348	751	2696	14436	200			135		

C-REF-NO 354 YR 1961 DEPTH 354 WAVES 1 XX AIR T -01.6 VIS
 CONS. NO 035 MONTH 8 MXSAMPD 03 WAVES 2 WET B STN 037
 LAT 65-30 N DAY 24 NO.DPTH 9 WND-DIR 320 WW-CODE
 LON 84-27 W HR 19.6 W-COLOR WND-SPD 03 CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT 1 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NC3	SIO	PH
203	0000	0170	3129	831	2505	14519	090			088		
202	0010	0055	3135		2516	14469						
202	0020	0000	3185		2559	14452						
202	0030	-0024	3212		2582	14447						
202	0050	-0082	3261	823	2623	14430	110			115		
196	0100	-0114	3306	781	2661	14430	170			133		
196	0200	-0152	3335	765	2685	14432	190			151		
196	0300	-0167	3351	758	2699	14444	180			154		
196	0340	-0172	3353	756	2700	14449	200			140		

C-REF-NO 354 YR 1961 DEPTH 42 WAVES 1 XX AIR T 01.1 VIS
 CONS. NO 036 MONTH 8 MXSAMPD 00 WAVES 2 WET B STN 039
 LAT 65-32 N DAY 25 NO.DPTH 5 WND-DIR 220 WW-CODE
 LON 84-52 W HR 21.6 W-COLOR WND-SPD 08 CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NC3	SIO	PH
216	0000	0140	3227	781	2585	14519	090					
216	0010	0073	3229	819	2591	14490	080					
216	0020	0028	3238	808	2600	14473	070					
216	0030	0025	3245	809	2606	14474	050					
216	0038	0006	3245	811	2607	14467	080					

C-REF-NO 354	YR 1961	DEPTH 40	WAVES 1	XX	AIR T 02.2	VIS
CONS. NO C37	MONTH 8	MXSAMPC 00	WAVES 2		WET B	STN 040
LAT 65-25 N	DAY 26	NO.DPTH 5	WND-DIR 180		WW-CODE	
LON 84-49 W	HR 20.0	W-COLOR	WND-SPD 13		CLD-TPE	
MARSC SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
200	0000	C200	3223	719	2578	14545	130			101		
200	0010	0134	3225	857	2584	14517	080			101		
200	0020	0102	3241	801	2599	14507	110			106		
200	0030	0078	3243	799	2602	14498	100			115		
200	0036	0063	3252	789	2610	14493	120			111		

C-REF-NO 354	YR 1961	DEPTH 320	WAVES 1	XX	AIR T -02.7	VIS
CONS. NO C38	MONTH 8	MXSAMPC 03	WAVES 2		WET B	STN 041
LAT 65-41 N	DAY 27	NO.DPTH 8	WND-DIR 180		WW-CODE	
LON 84-24 W	HR 14.9	W-COLOR	WND-SPD 06		CLD-TPE	
MARSC SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
153	0000	-0020	3245	808	2608	14448	090			121		
153	0010	-0052	3252	808	2615	14436	080			133		
153	0020	-0050	3256	805	2618	14439	100			121		
153	0030	-0055	3265	795	2626	14440	100			129		
153	0050	-0062	3275	792	2634	14441	120			147		
149	0100	-0116	3279	806	2639	14425	110			141		
149	0200	-0122	3317	779	2670	14444	110			141		
149	0300	-0142	3326	773	2678	14452	130			141		

C-REF-NO 354 YR 1961 DEPTH 247 WAVES 1 XX AIR T -02.2 VIS
 CONS. NO 039 MONTH 8 MXSAMPD C2 WAVES 2 WEI B STN 042
 LAT 65-56 N DAY 27 NO.DPTH 8 WND-DIR 090 WW-CODE
 LON 84-36 W PR 20.4 W-COLOR WND-SPD 05 CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
208	0000	-0020	3252	803	2614	14449	140					
208	0010	-0072	3259	803	2621	14428	100					
208	0020	-0090	3281	793	2640	14424	130					
208	0030	-0090	3281	781	2640	14426						
208	0050	-0097	3286	785	2644	14426	150					
204	0100	-0098	3288	790	2646	14435	130					
204	0200	-0104	3304	783	2659	14450	150					
204	0235	-0111	3308	775	2662	14454	120					

C-REF-NO 354 YR 1961 DEPTH 85 WAVES 1 XX AIR T -04.9 VIS
 CONS. NO 040 MONTH 8 MXSAMPD 01 WAVES 2 WET B STN 043
 LAT 66-13 N DAY 28 NO.DPTH 6 WND-DIR 090 WW-CODE
 LON 85-09 W PR 11.5 W-COLOR WND-SPD 07 CLD-TPE
 MARSD SQ 225 W-TRNSP BARO CLD-AMT 1 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
118	0000	-0010	3248	817	2610	14453						
118	0010	-0030	3248	792	2611	14446						
118	0020	-0028	3248	813	2611	14448						
118	0030	-0032	3248	801	2611	14448						
115	0050	-0029	3248	815	2611	14453						
115	0075	-0032	3248	805	2611	14456						

C-REF-NO 354	YR 1961	DEPTH	98	WAVES 1	XX	AIR T -03.8	VIS
CONS. NO 041	MONTH 8	MXSAMPD	C1	WAVES 2		WET B	STN 044
LAT 66-11 N	DAY 28	NO.DPTH	6	WND-DIR	090	WW-CODE	
LON 85-07 W	HR 14.2	W-COLOR		WND-SPD	10	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
143	0000	C000	3281		2636	14463					
143	0010	-C011	3270		2628	14458					
143	0020	-C011	3266		2625	14459					
143	0030	-C010	3263		2622	14460					
143	0050	-C011	3263		2622	14463					
142	0090	-C013	3268		2626	14470					

C-REF-NO 354	YR 1961	DEPTH	45	WAVES 1	XX	AIR T -02.7	VIS
CONS. NO 042	MONTH 8	MXSAMPD	C0	WAVES 2		WET B	STN 045
LAT 66-07 N	DAY 28	NO.DPTH	5	WND-DIR	090	WW-CODE	
LON 85-05 W	HR 17.0	W-COLOR		WND-SPD	11	CLD-TPE	
MARSD SQ 225		W-TRNSP		BARO		CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
170	0000	C050	3277	803	2631	14485					
170	0010	-C031	3272	803	2630	14449					
170	0020	C028	3274	805	2629	14478					
170	0030	-C018	3274	802	2631	14458					
170	0040	C026	3274	803	2629	14480					

C-REF-NO 354	YR 1961	DEPTH 135	WAVES 1	XX	AIR T -04.9	VIS
CONS. NO 043	MONTH 8	MXSAMPD C1	WAVES 2		WET B	STN 046
LAT 65-35 N	DAY 31	NO.DPTH 7	WND-DIR 290		WW-CODE	
LON 89-04 W	HR 13.0	W-COLOR	WND-SPD 12		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
134	0000	0100	3214	787	2577	14499	080					
134	0010	0176	3214	796	2572	14534	070					
134	0020	0208	3214	783	2570	14550						
134	0030	0192	3214	783	2571	14545	050					
130	0050	0180	3229	785	2584	14545	070					
130	0100	-0067	3295	789	2650	14450	090					
130	0120	-0100	3306	787	2660	14439	130					

C-REF-NO 354	YR 1961	DEPTH 82	WAVES 1	XX	AIR T -03.3	VIS
CONS. NO 044	MONTH 9	MXSAMPD C1	WAVES 2		WET B	STN 021
LAT 64-43 N	DAY 01	NO.DPTH 6	WND-DIR 090		WW-CODE	
LON 86-57 W	HR 13.9	W-COLOR	WND-SPD 08		CLD-TPE	
MARSD SQ 225		W-TRNSP	BARO		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
142	0000	0300	3229		2575	14589						
142	0010	0311	3232	765	2576	14596						
142	0020	0350	3234	771	2574	14615						
142	0030	0272	3243	767	2588	14584						
139	0050	0242	3250	769	2596	14575						
139	0075	0048	3288	783	2639	14498						

C-REF-NO 354	YR 1961	DEPTH	15	WAVES 1	XX	AIR T -03.3	VIS
CONS. NO 045	MONTH 9	MXSAMPD	00	WAVES 2		WET B	STN 006
LAT 62-40' N	DAY 10	NO.DPTH	5	WND-DIR	360	WW-CODE	
LON 91-12 W	HR 20.4	W-COLOR		WND-SPD	20	CLD-TPE	
MARSD SQ 226		W-TRNSP		BARO		CLD-AMT 8	HW

O B S E R V E D

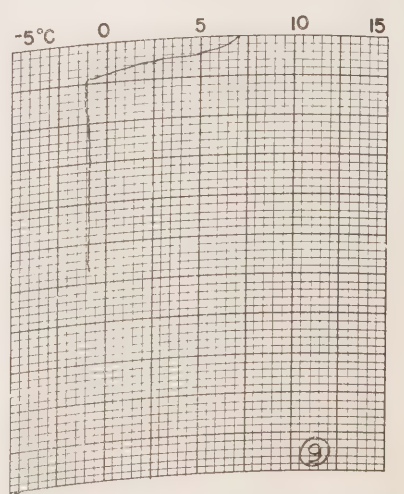
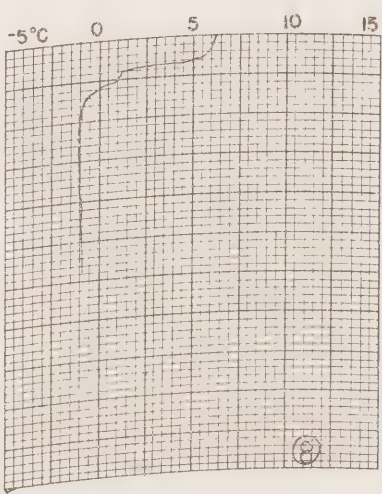
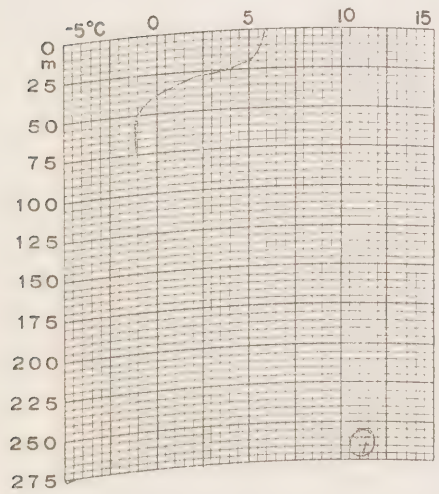
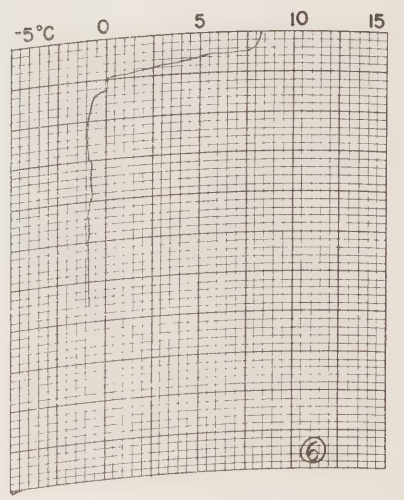
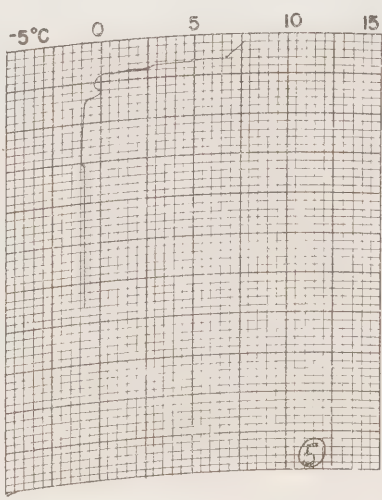
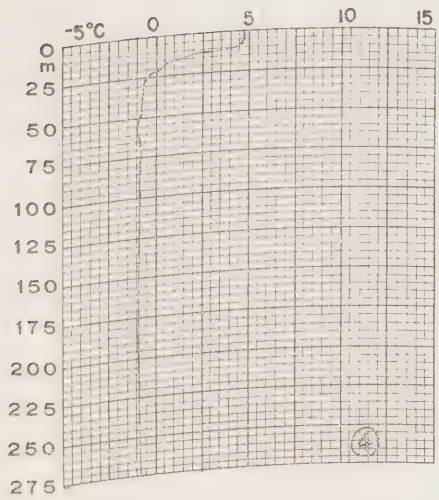
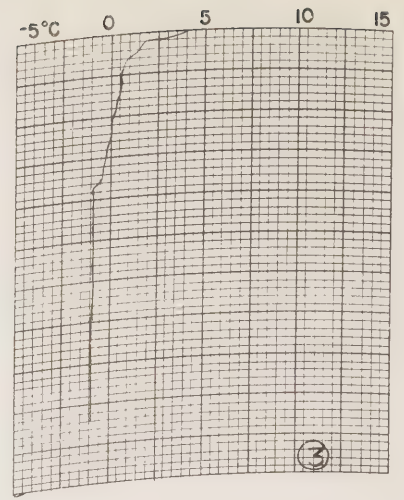
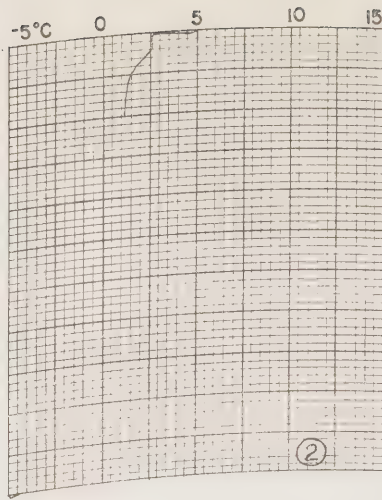
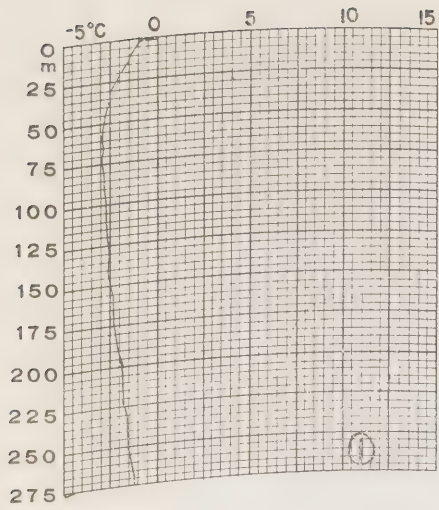
GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NC3	SIO	PH
208	0000	C200	3136	764	2508	14533					
208	0003	C200	3133	755	2506	14533					
208	0005	0200	3133	759	2506	14533					
208	0007	C202	3136	767	2508	14535					
204	0010	C205	3136	749	2508	14537					

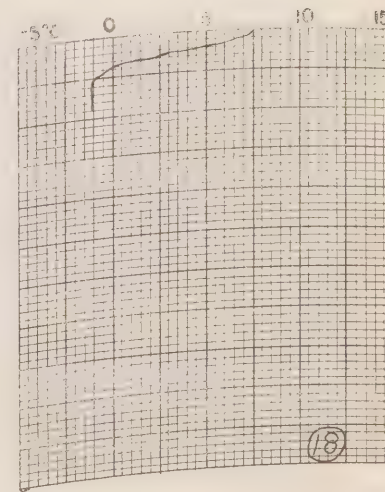
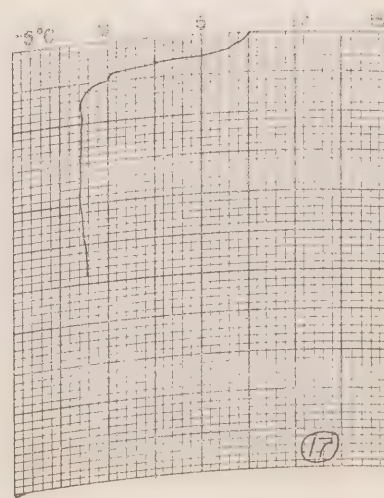
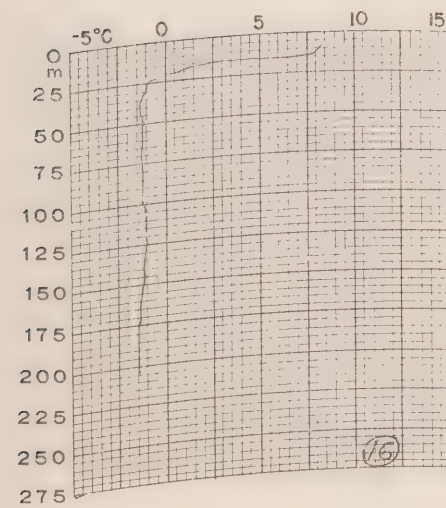
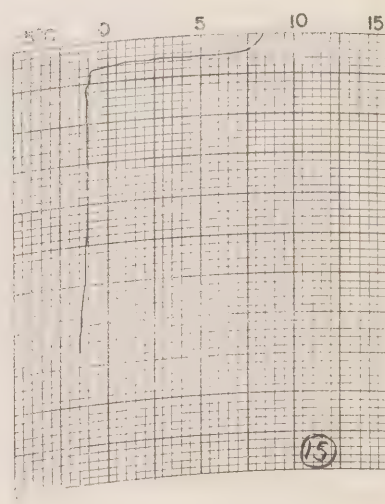
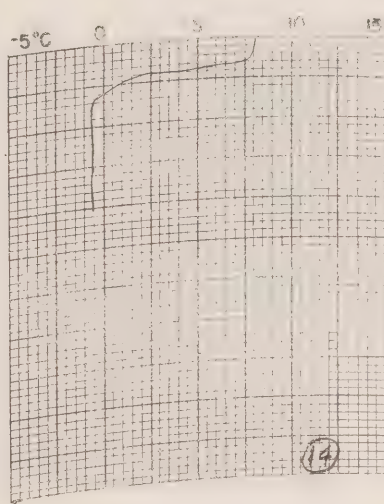
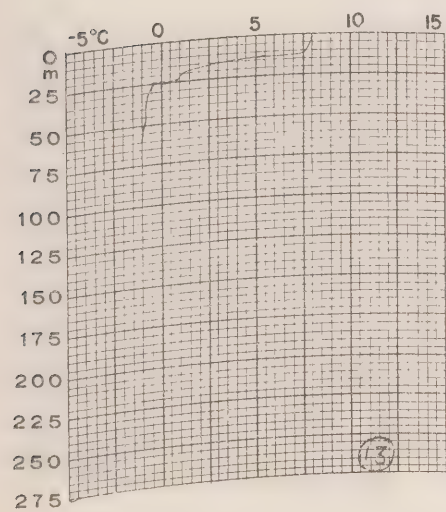
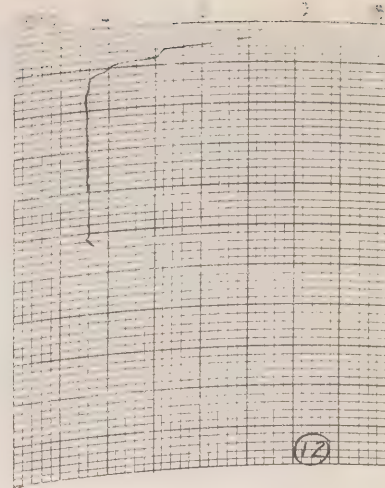
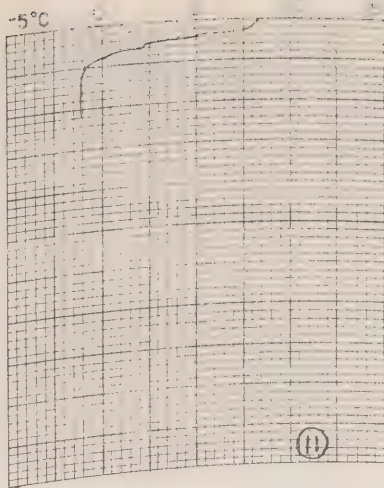
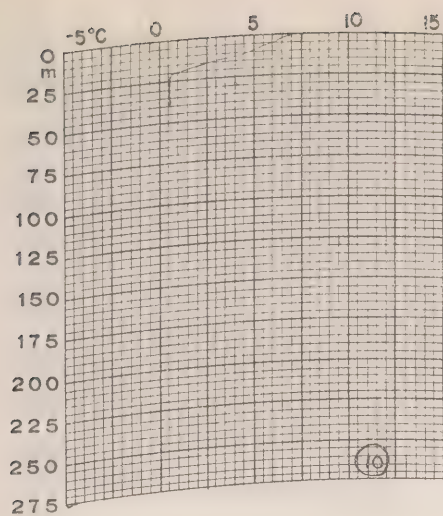
SECTION IV

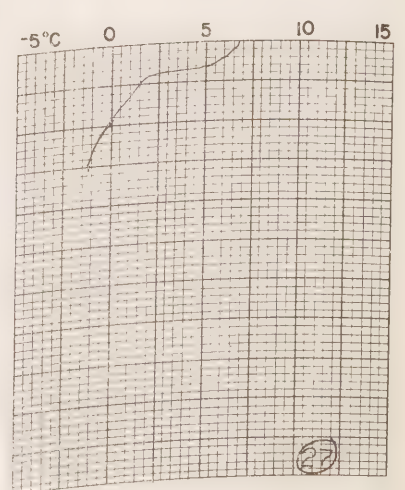
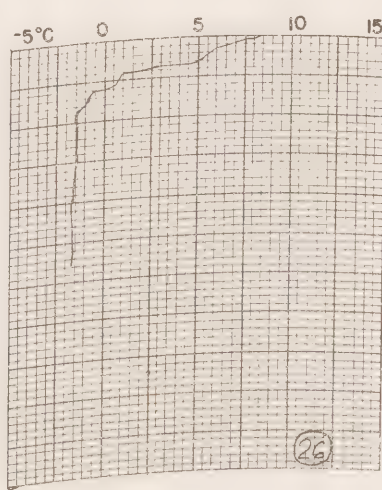
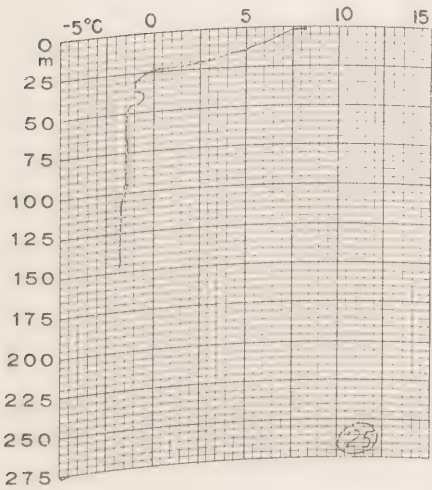
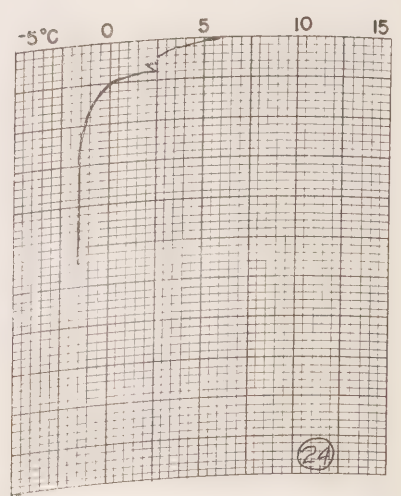
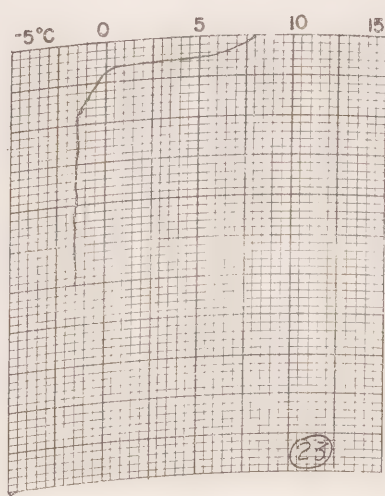
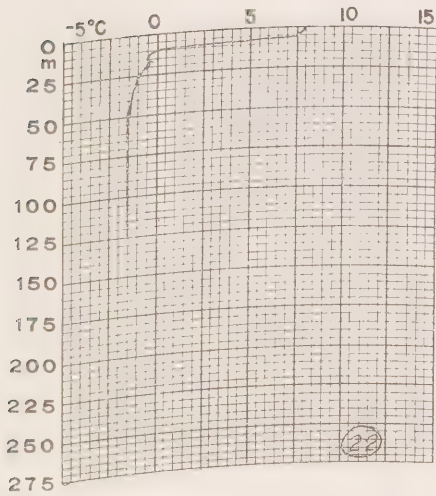
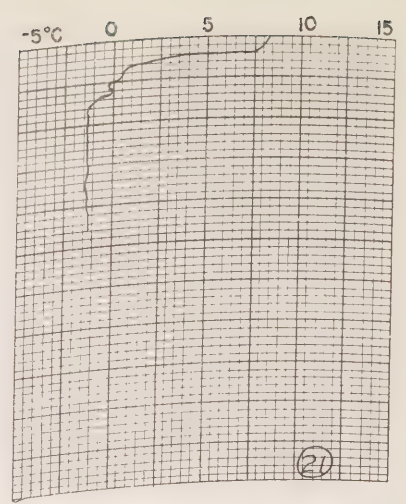
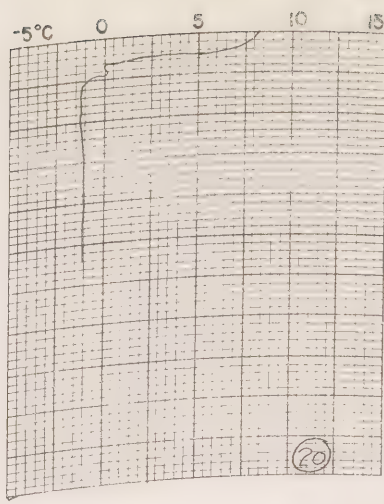
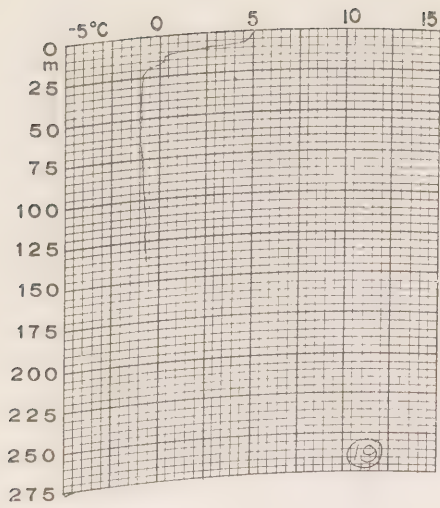
Theta

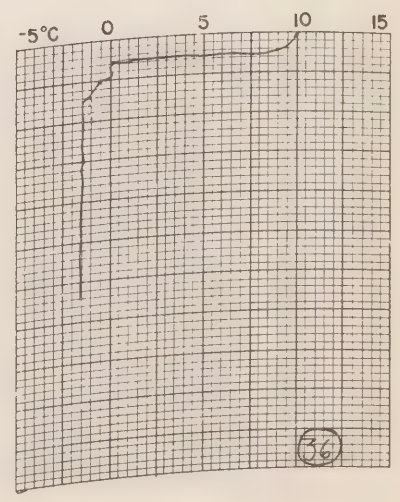
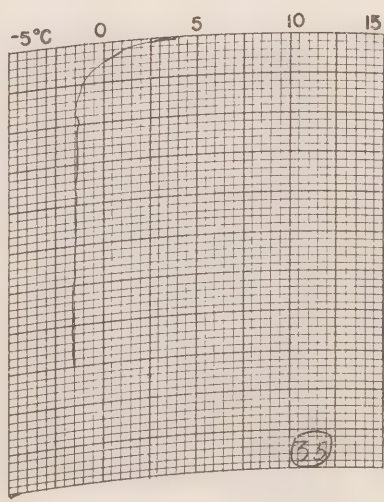
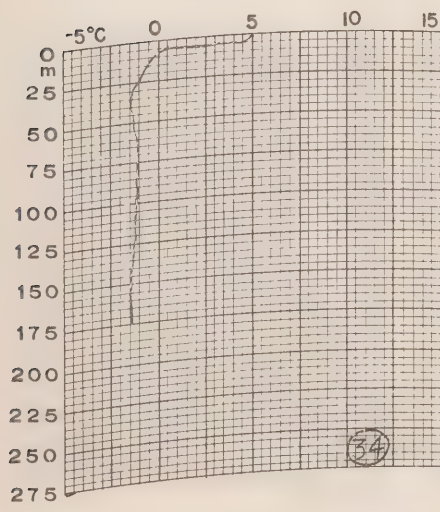
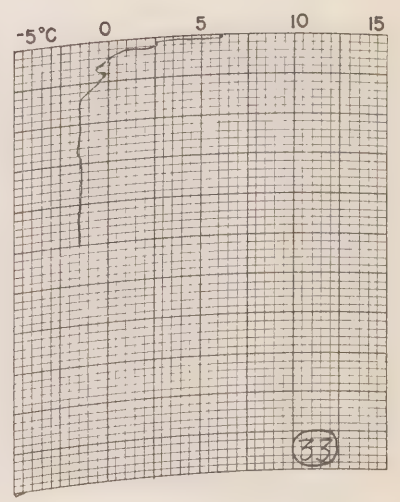
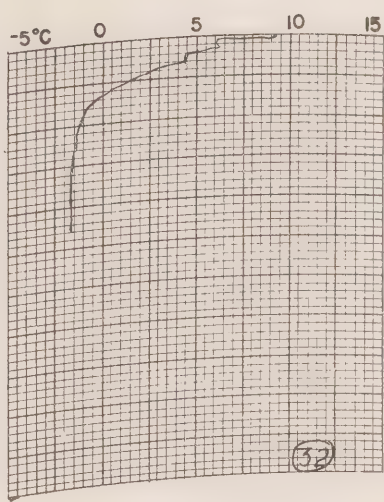
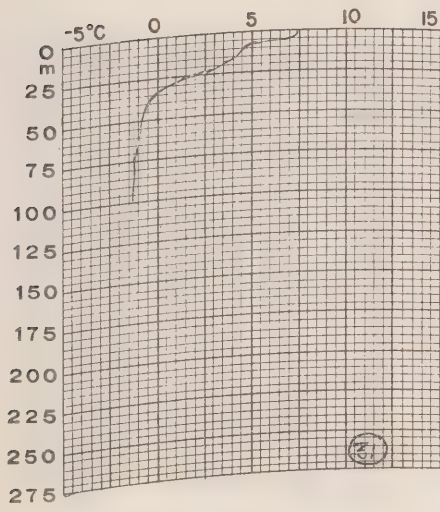
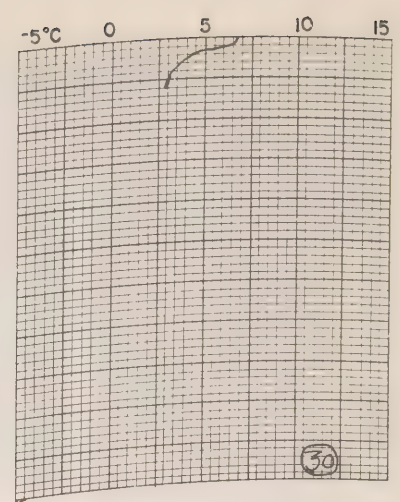
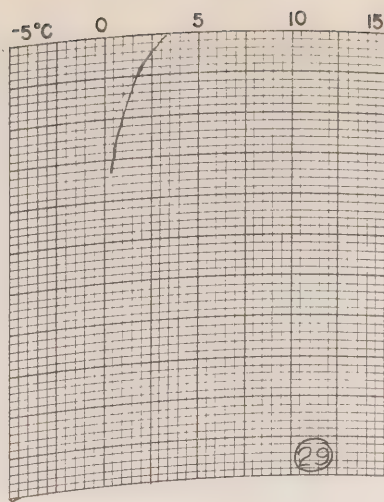
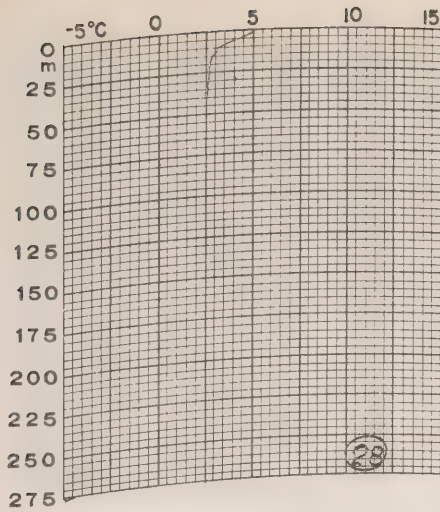
Bathythermograms

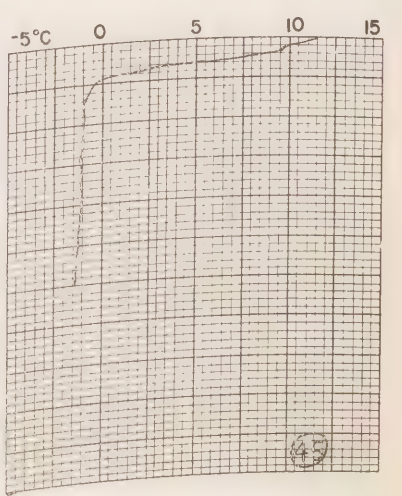
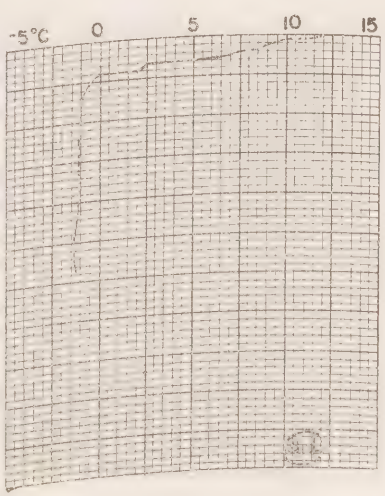
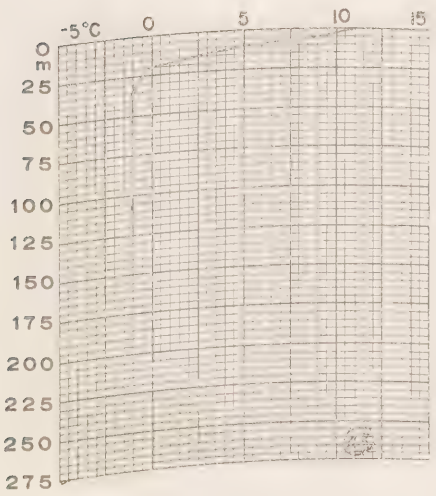
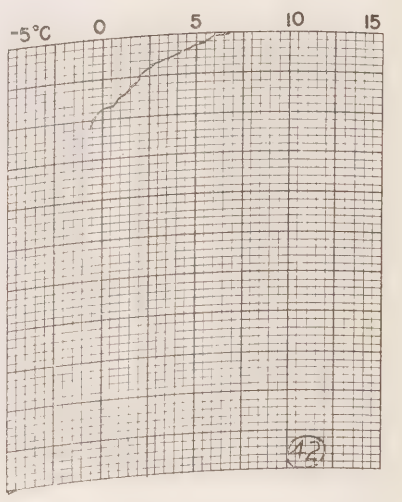
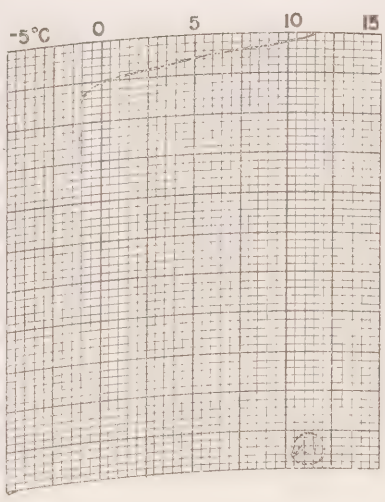
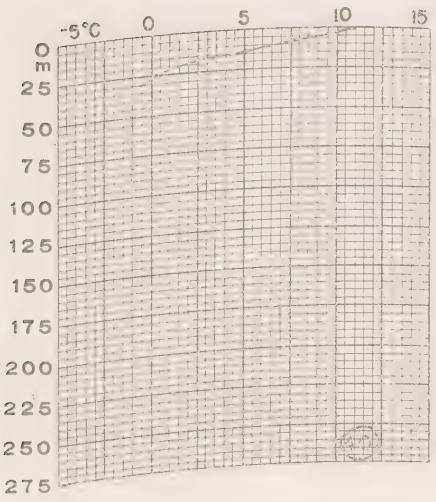
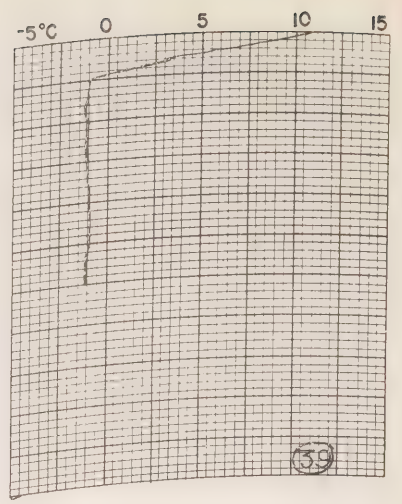
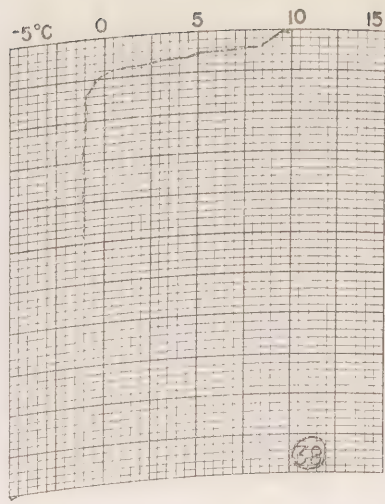
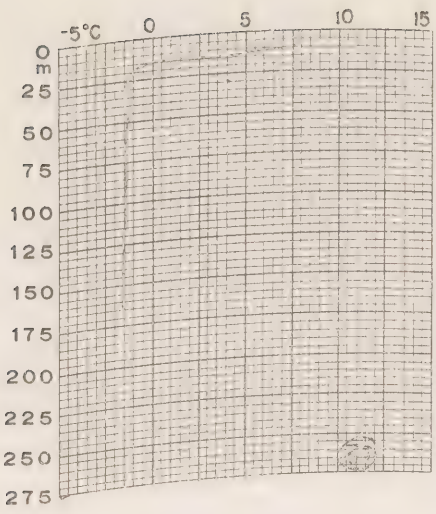
PHASE I

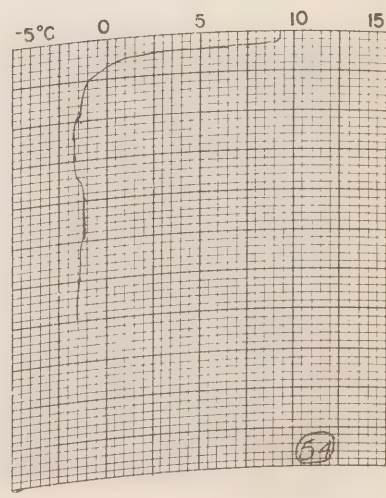
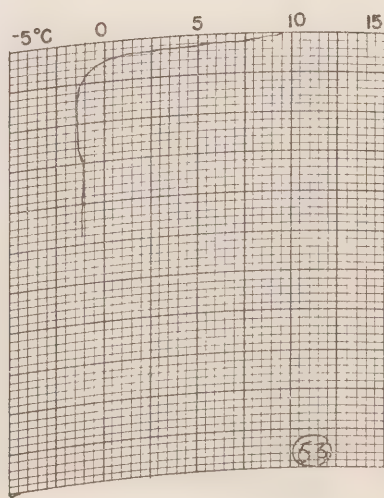
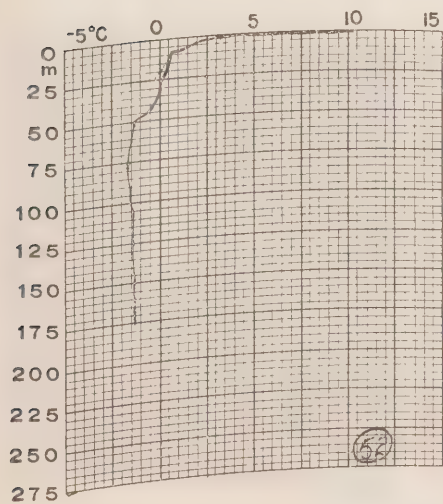
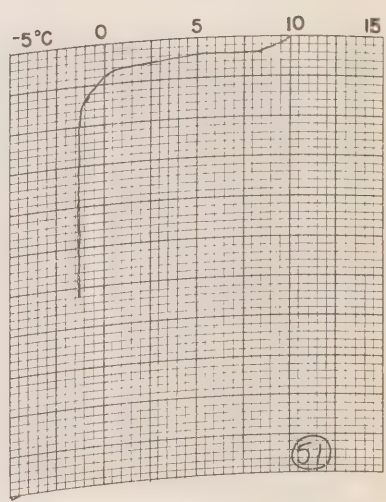
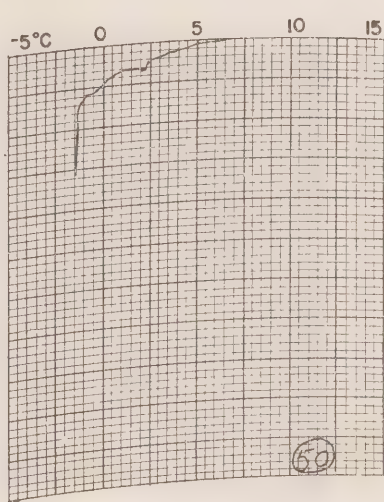
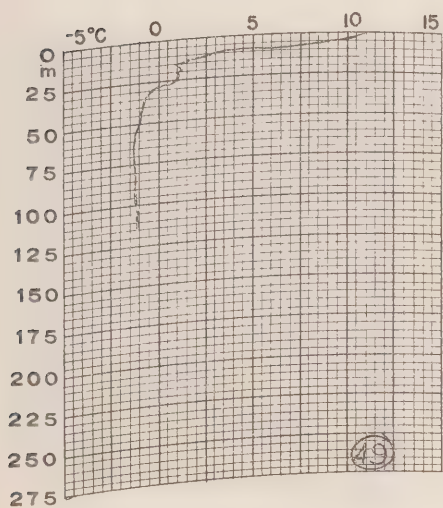
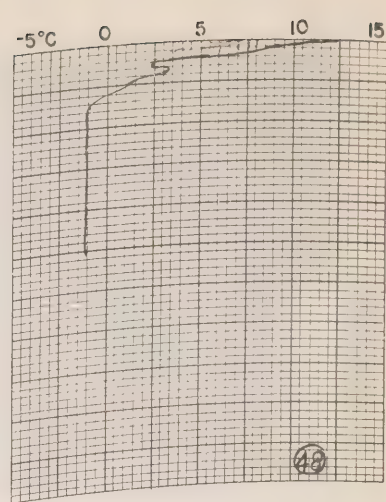
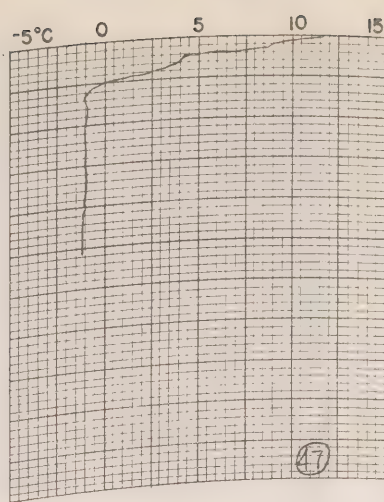
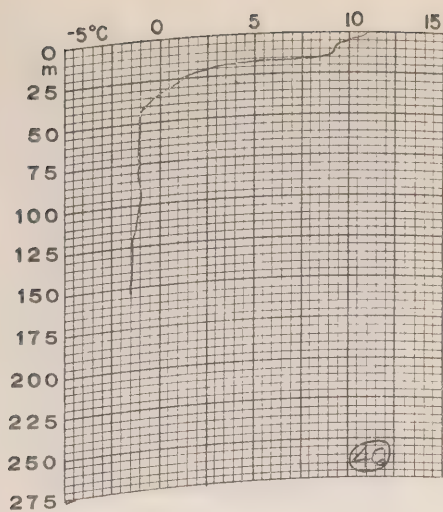


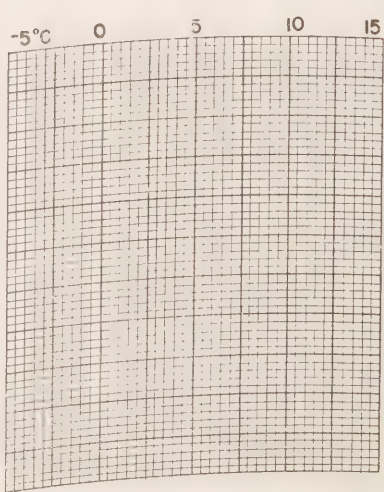
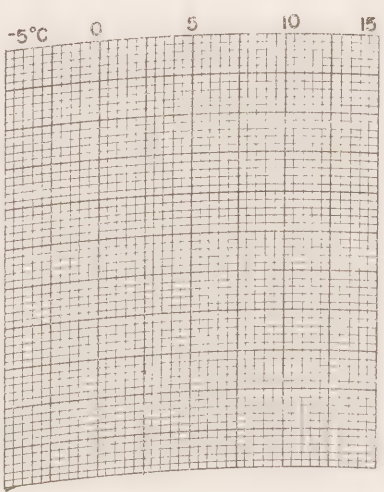
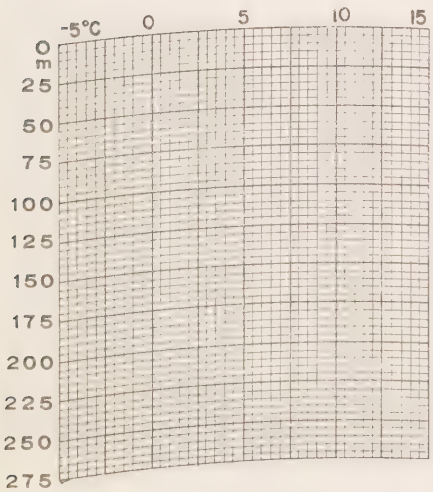
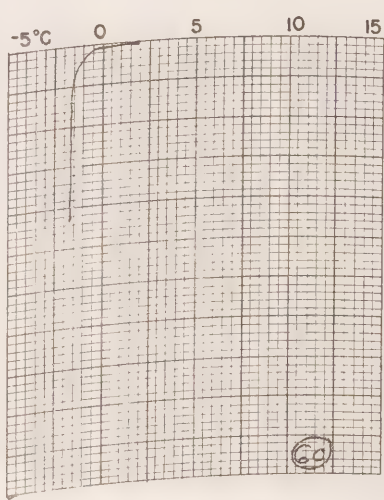
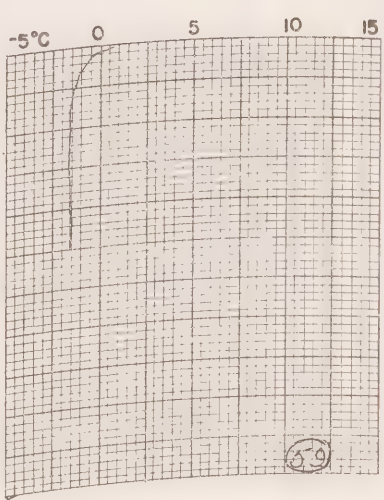
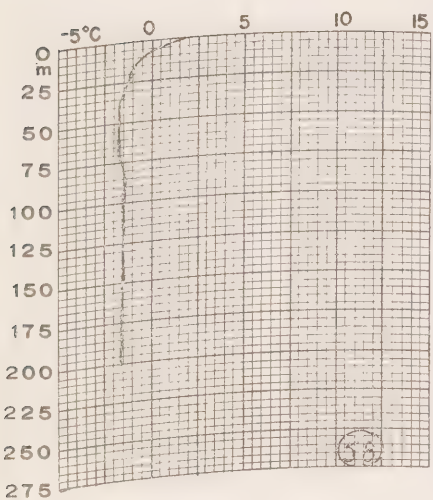
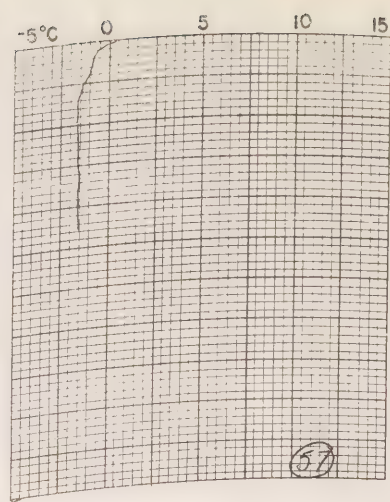
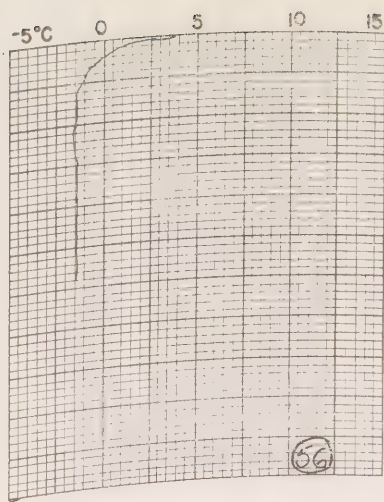
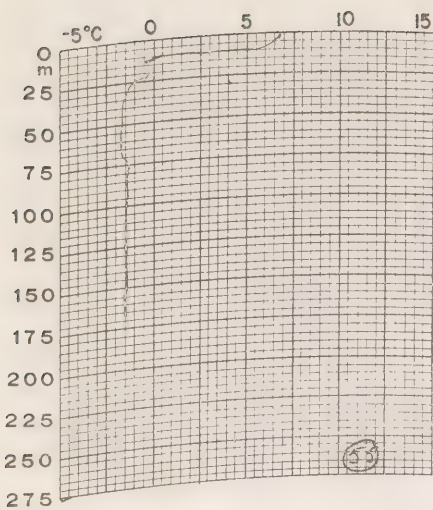




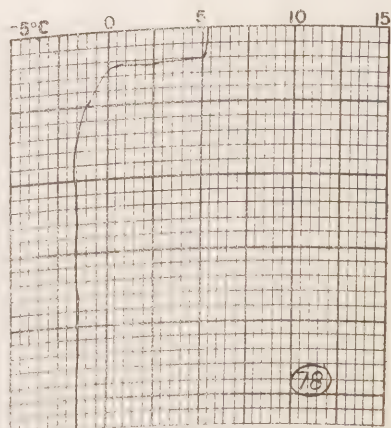
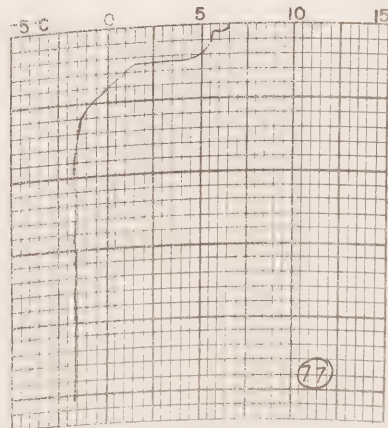
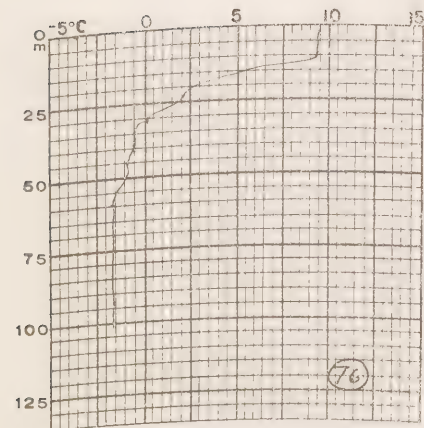
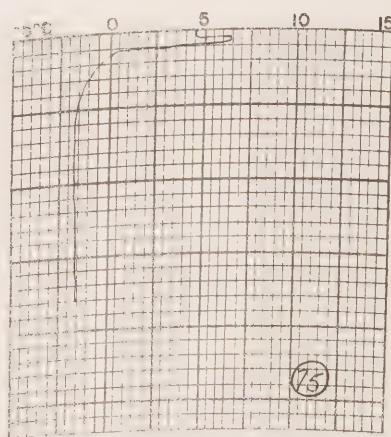
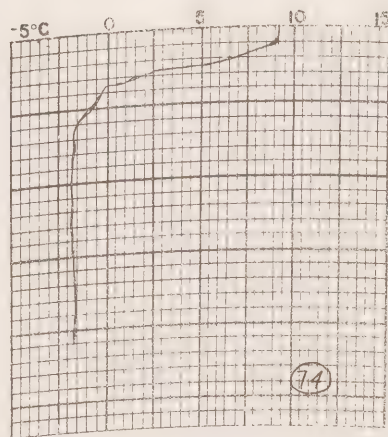
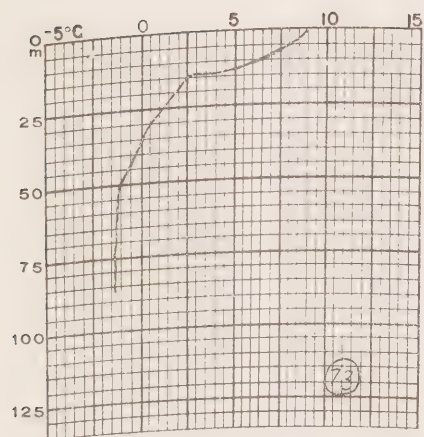
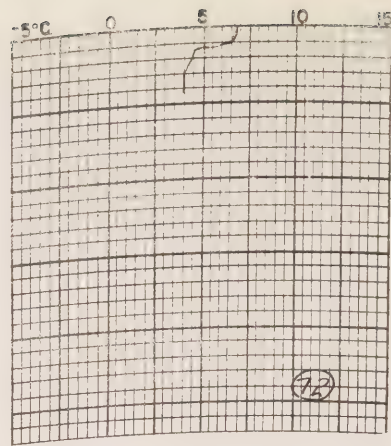
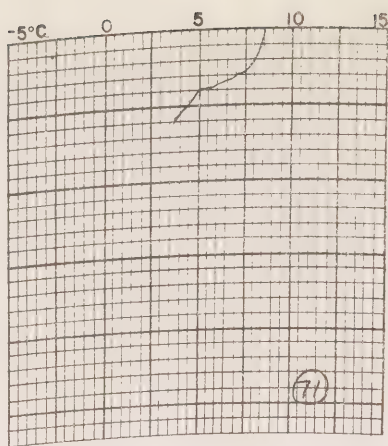
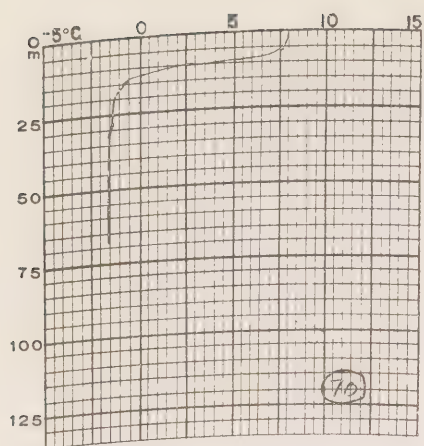


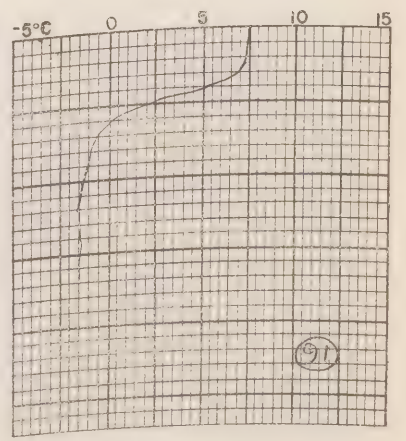
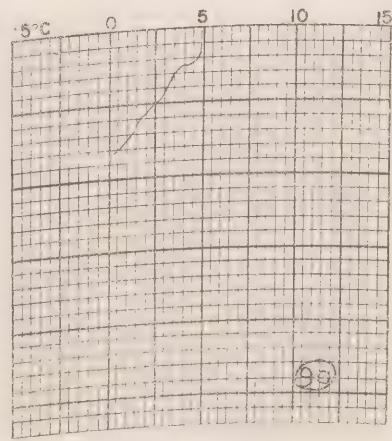
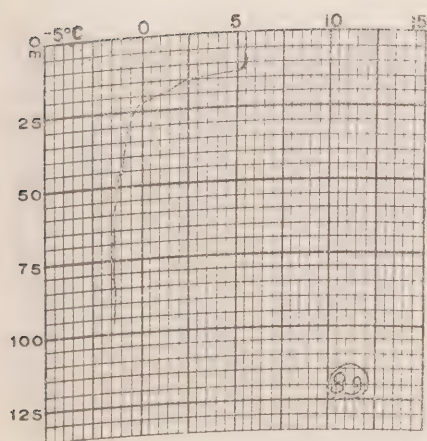
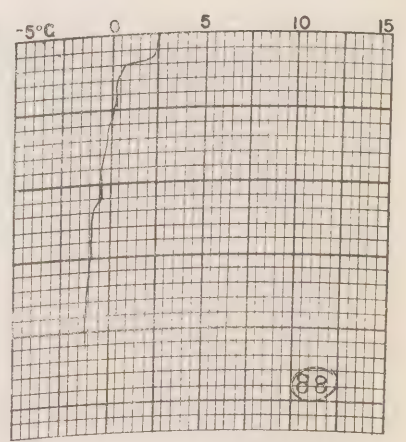
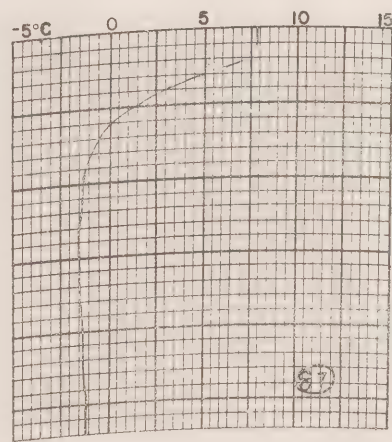
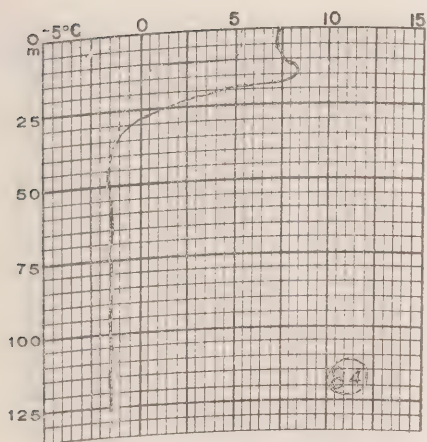
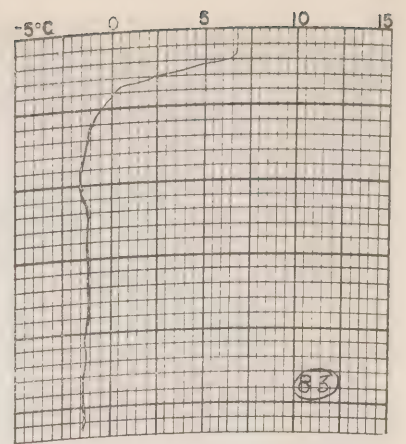
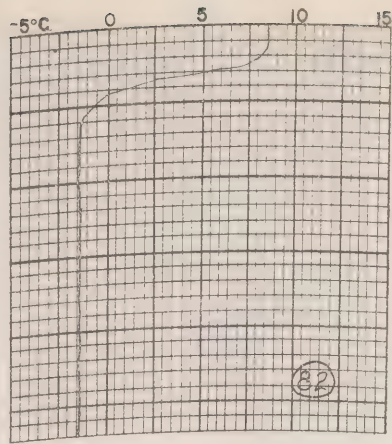
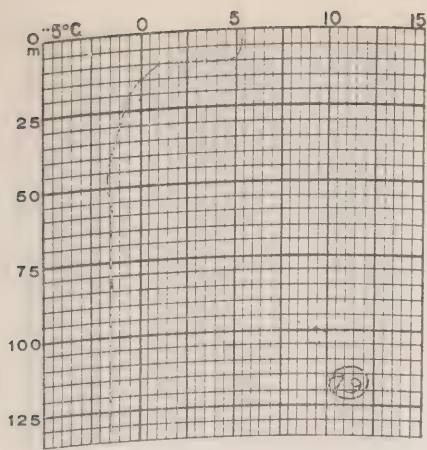


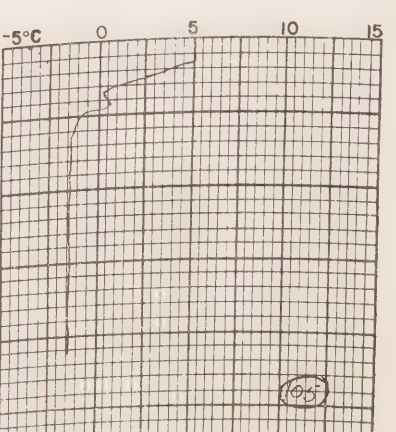
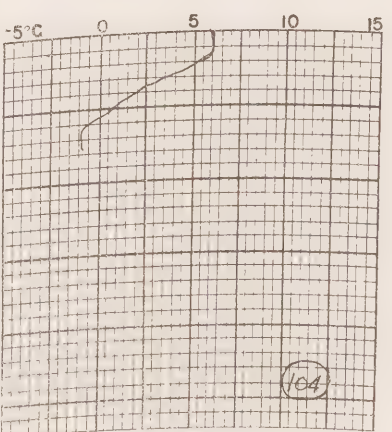
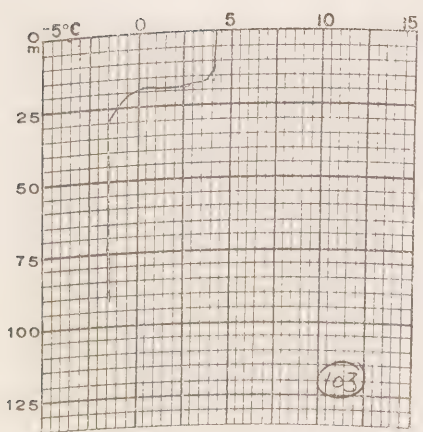
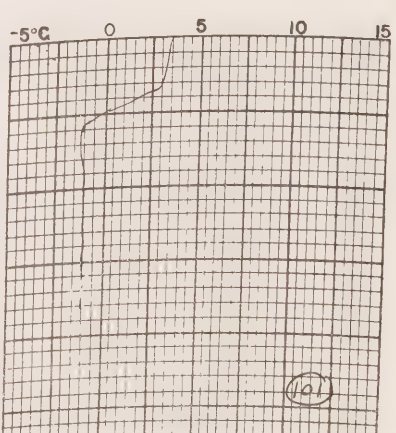
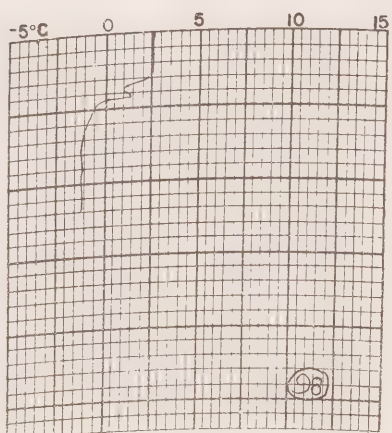
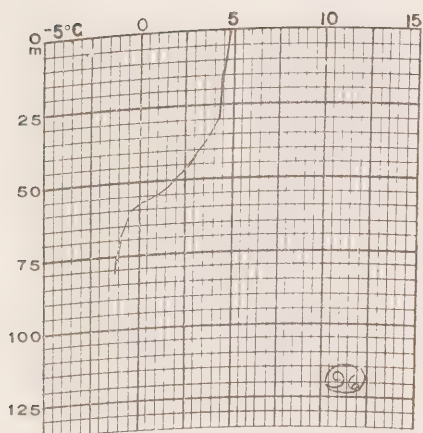
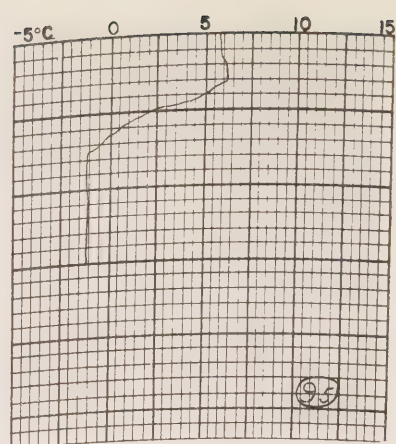
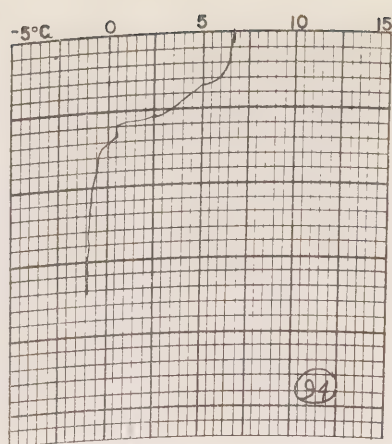
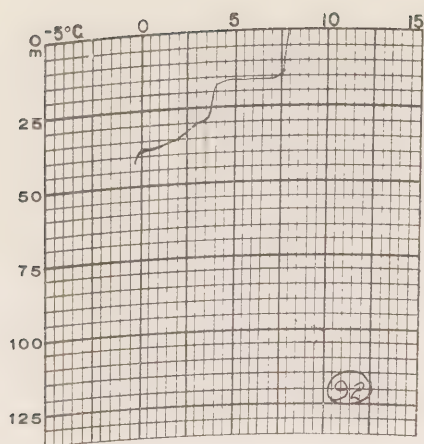


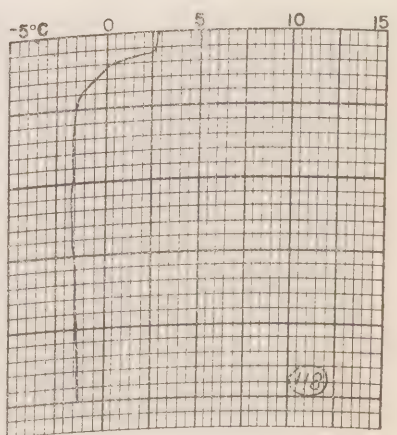
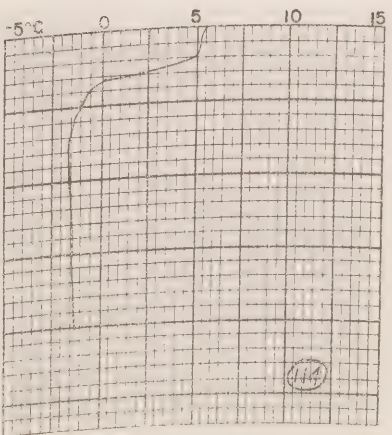
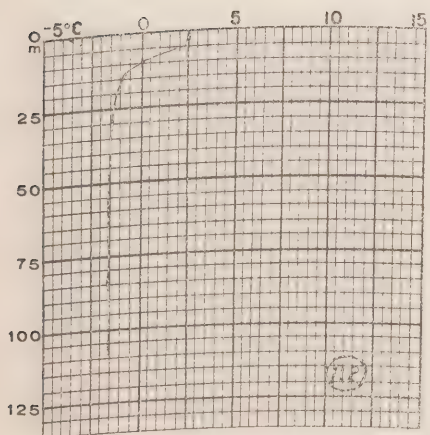
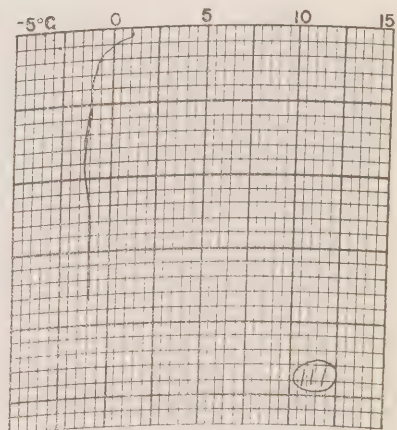
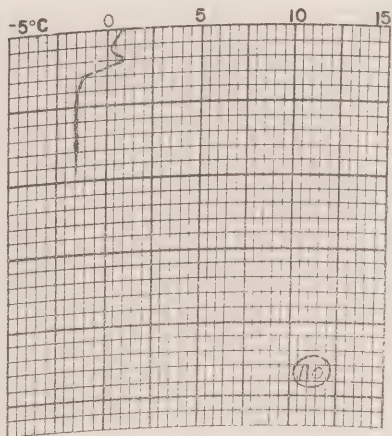
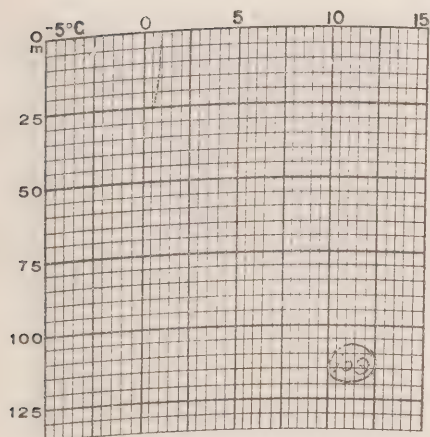
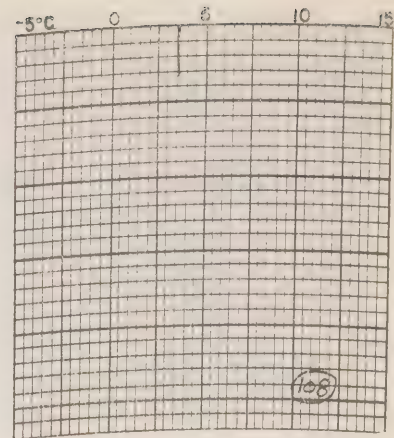
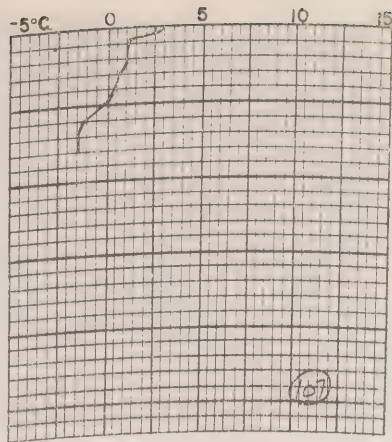
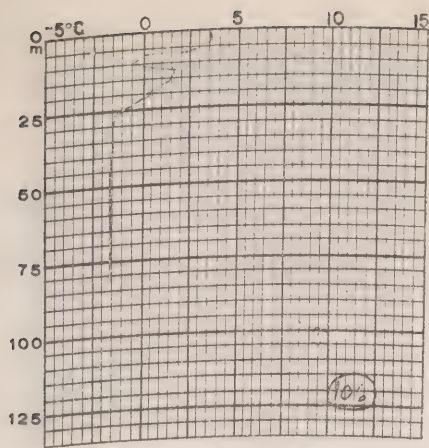


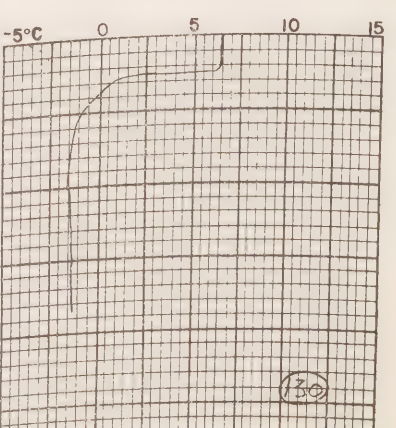
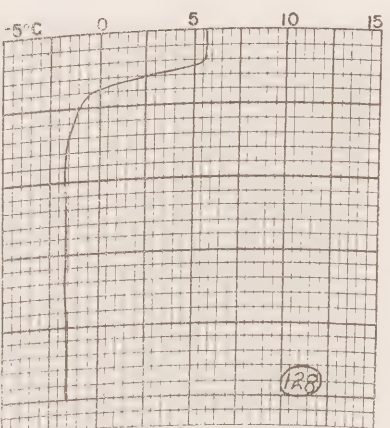
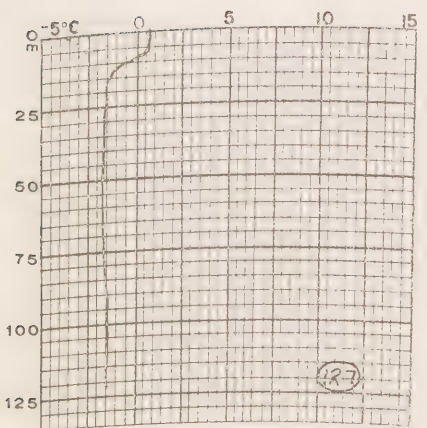
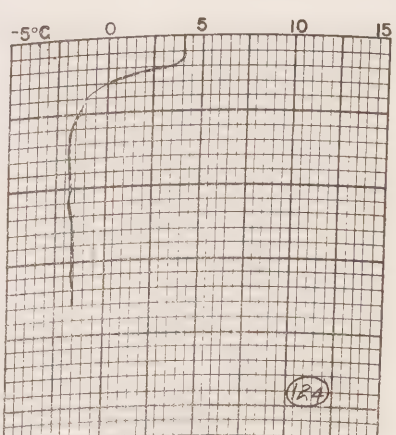
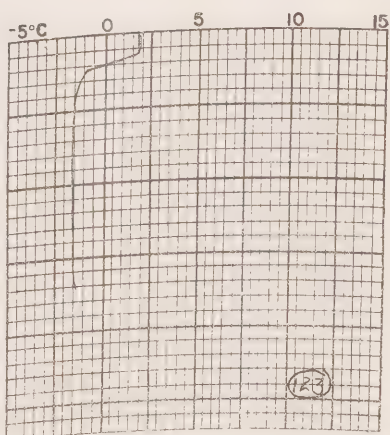
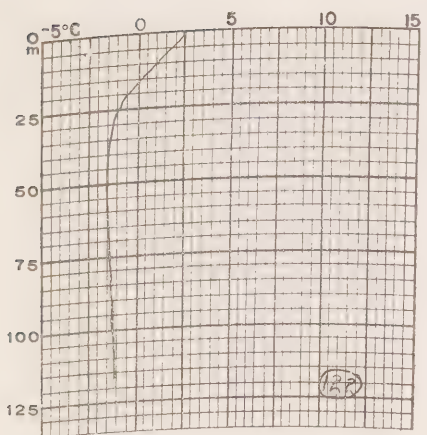
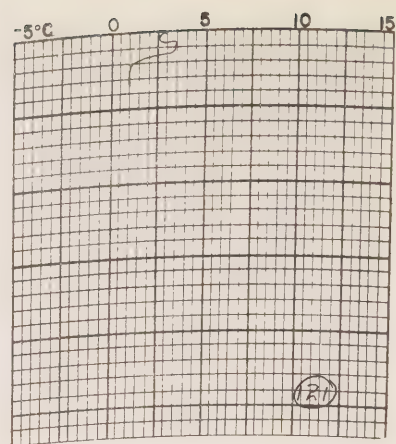
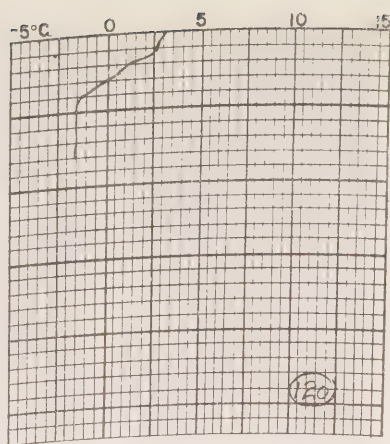
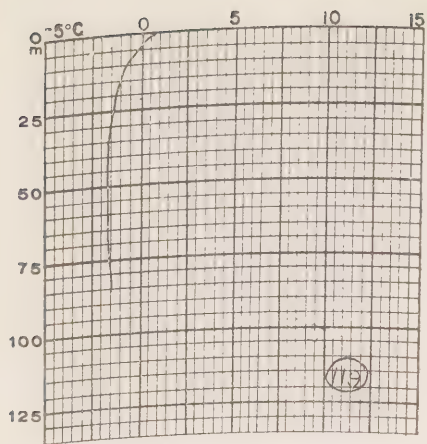
PHASE II

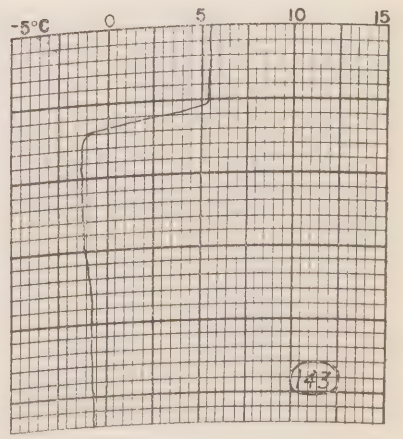
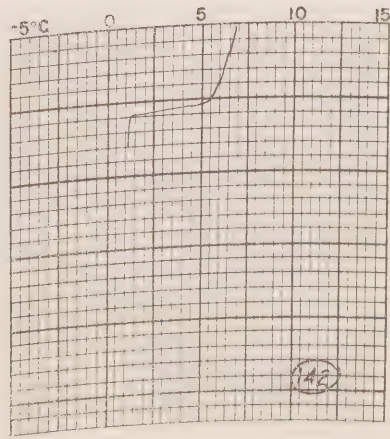
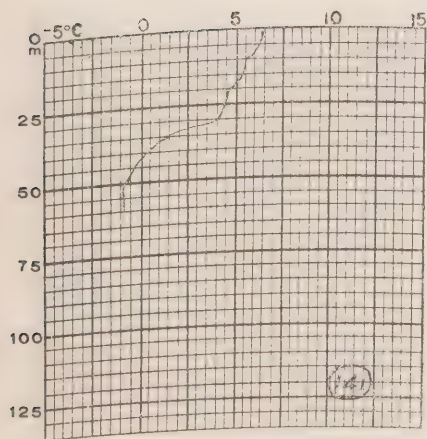
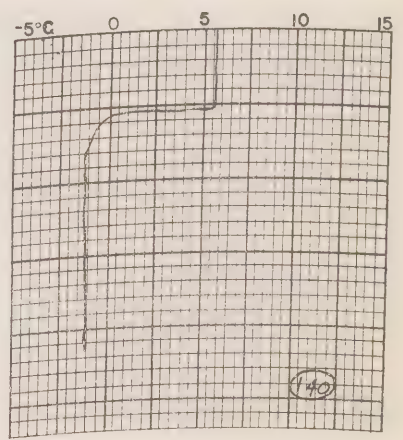
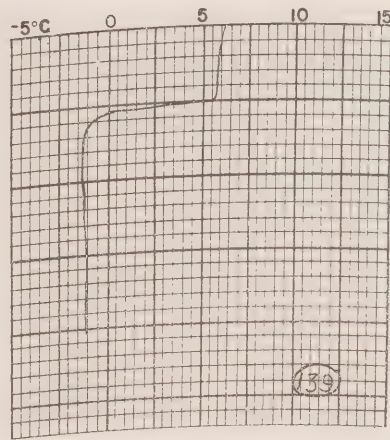
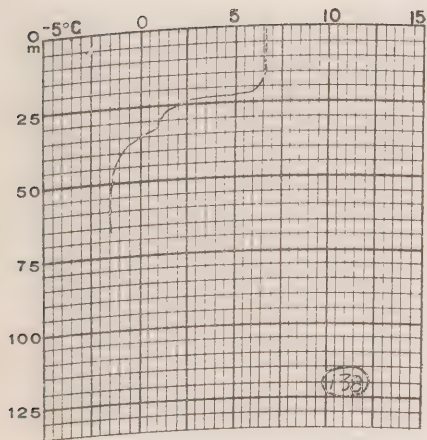
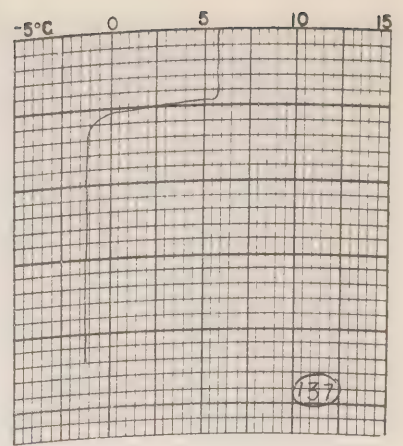
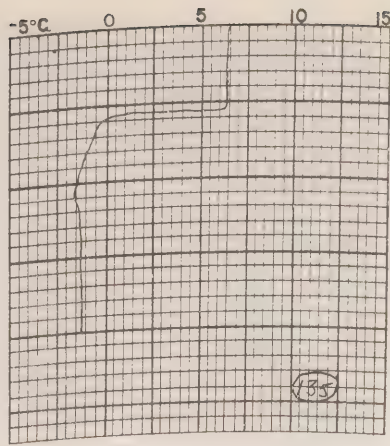
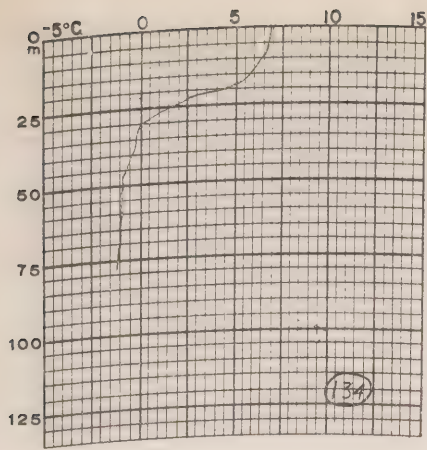


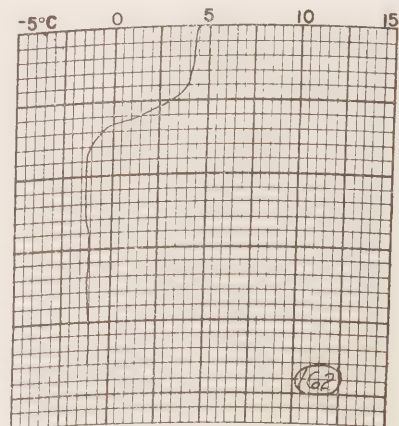
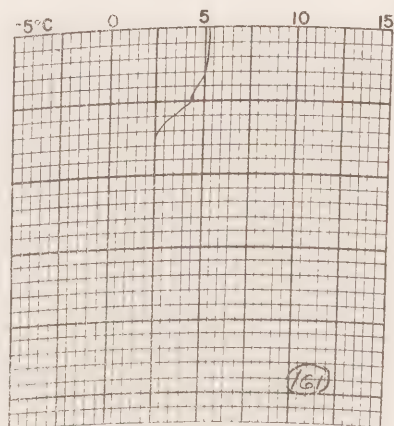
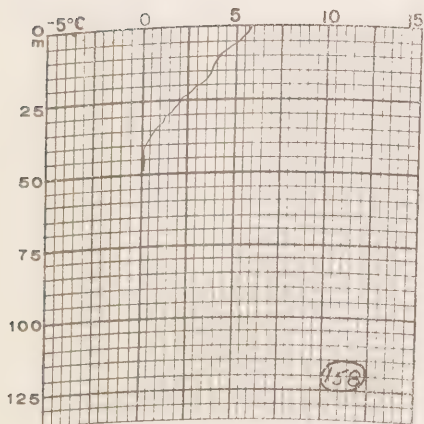
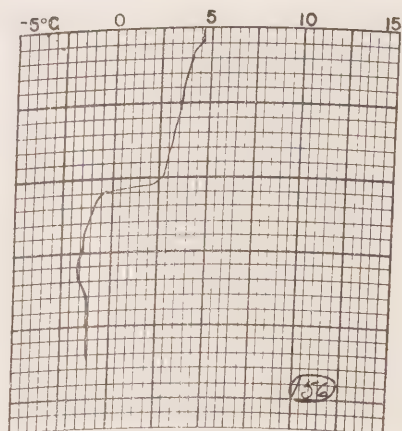
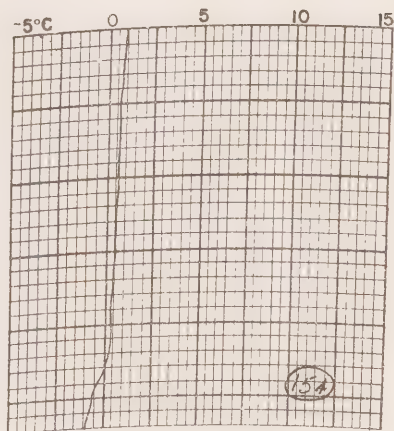
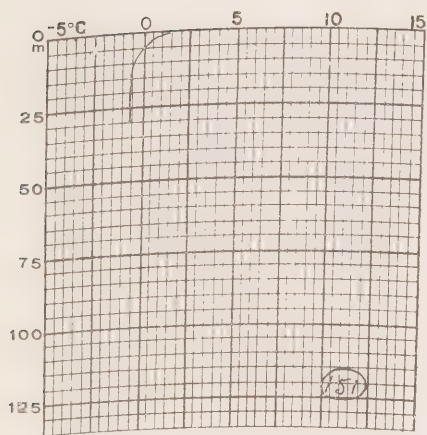
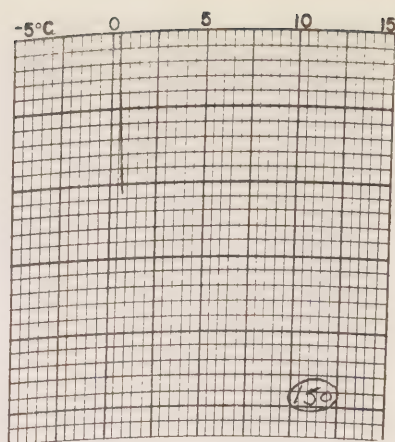
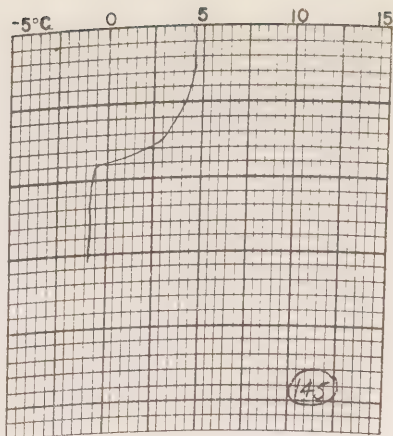
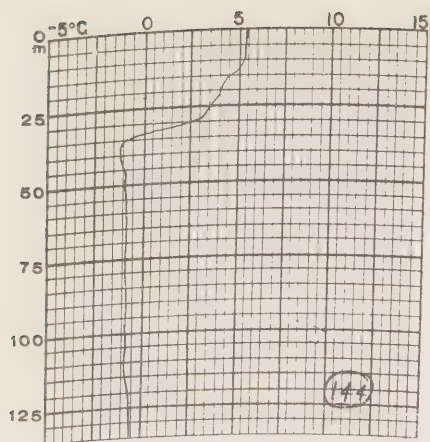


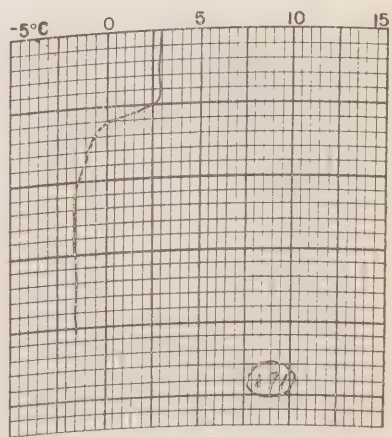
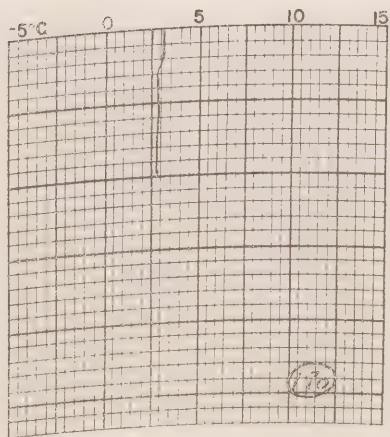
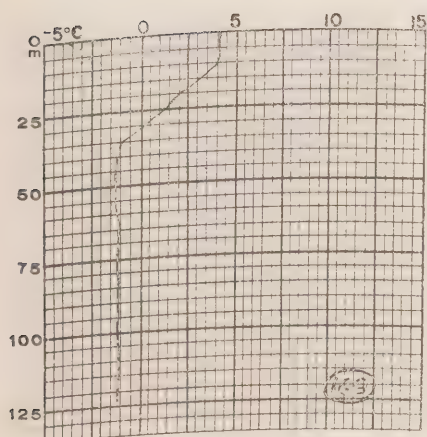
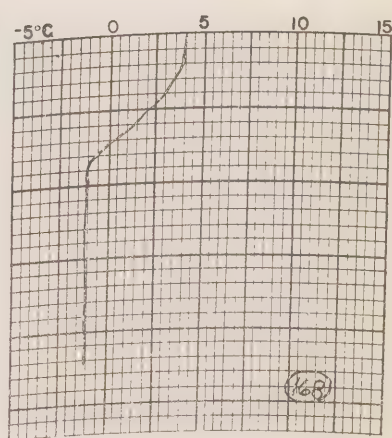
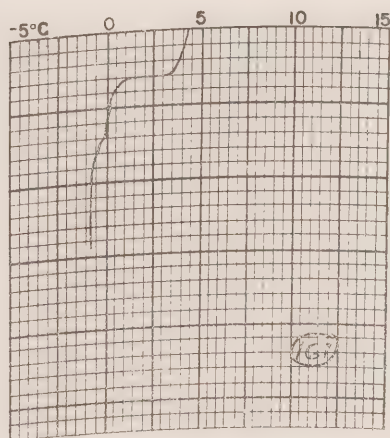
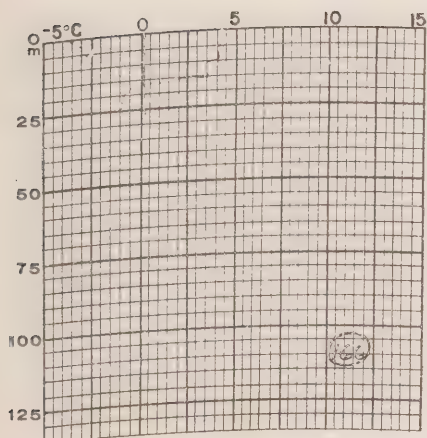
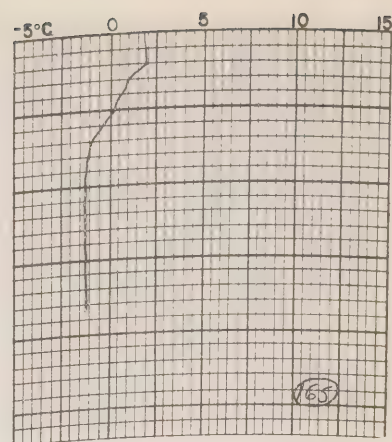
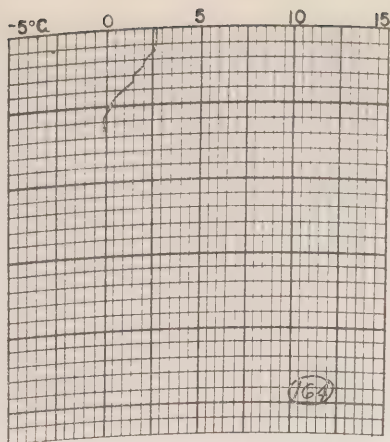
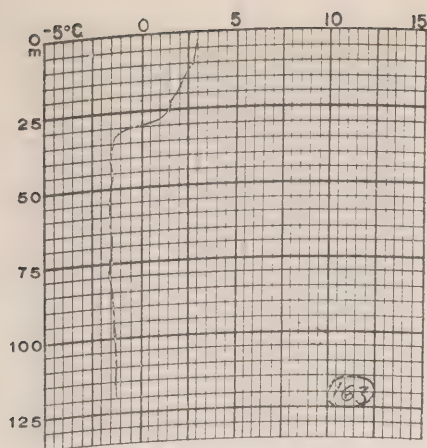


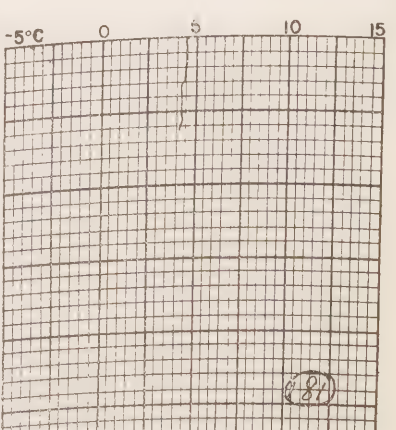
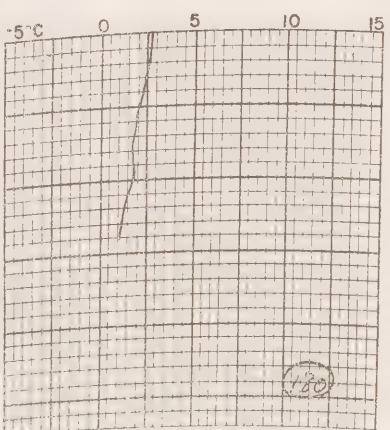
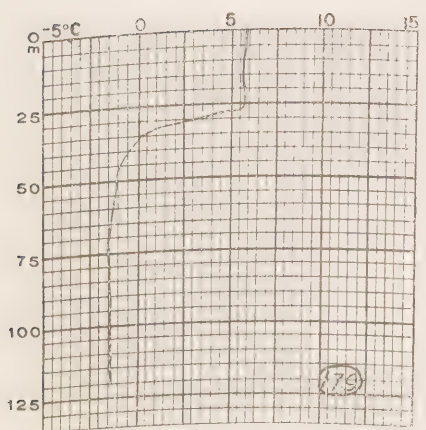
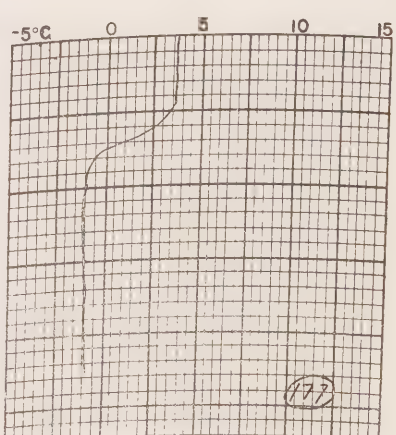
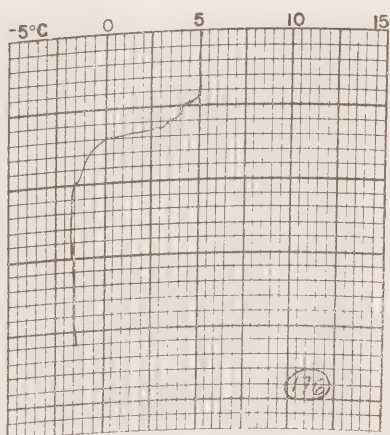
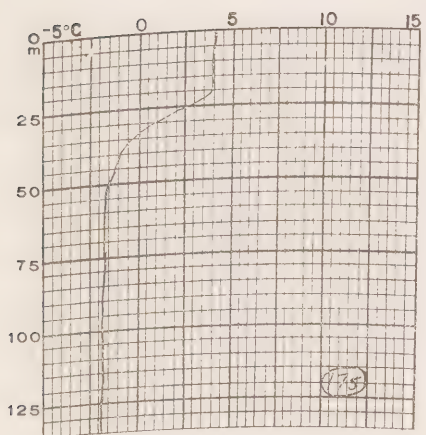
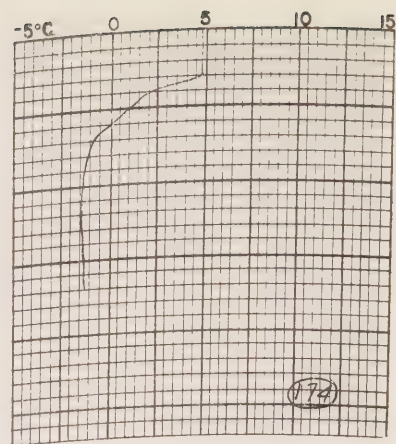
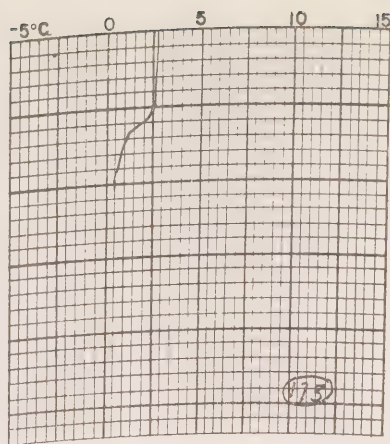
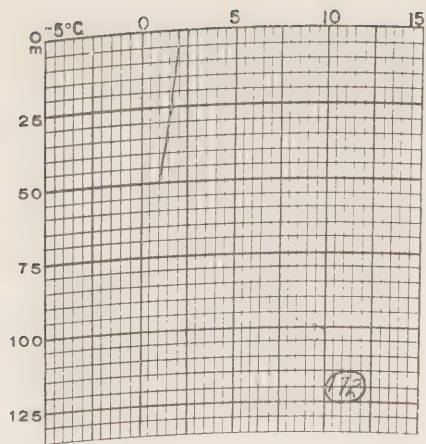


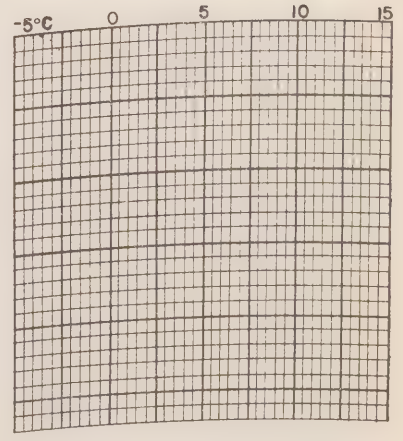
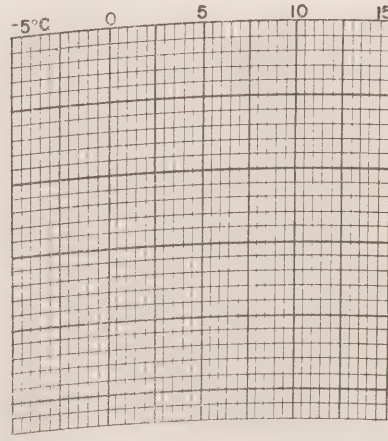
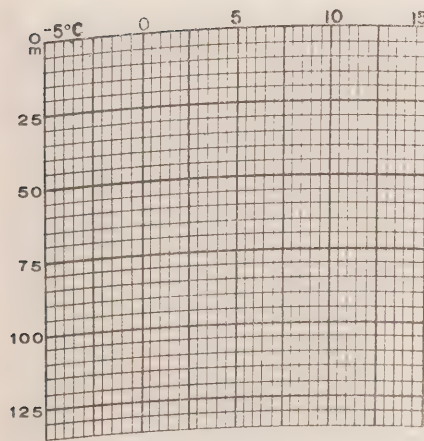
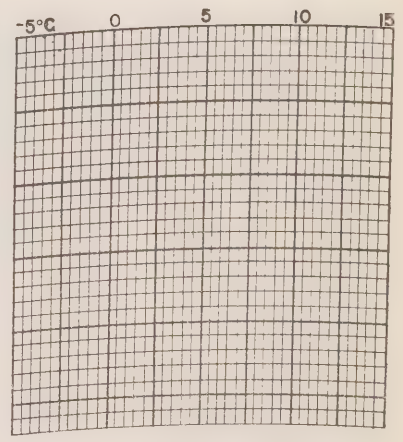
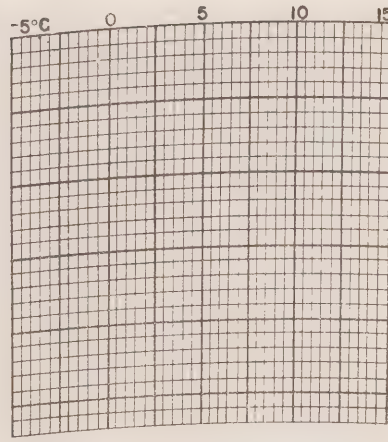
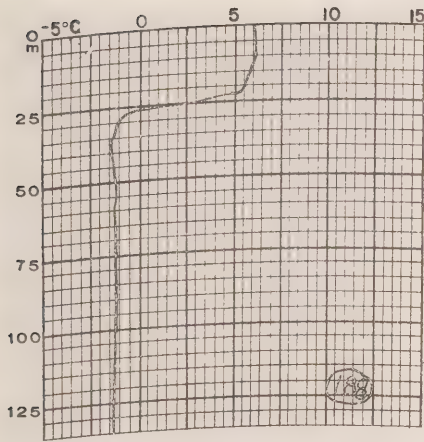
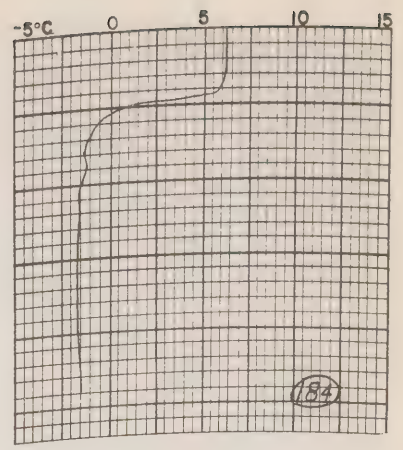
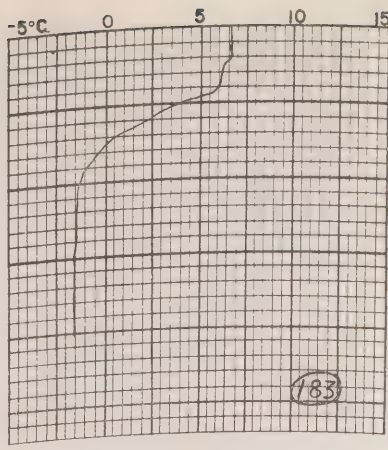
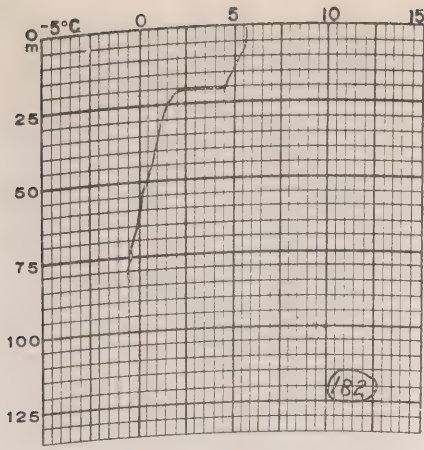


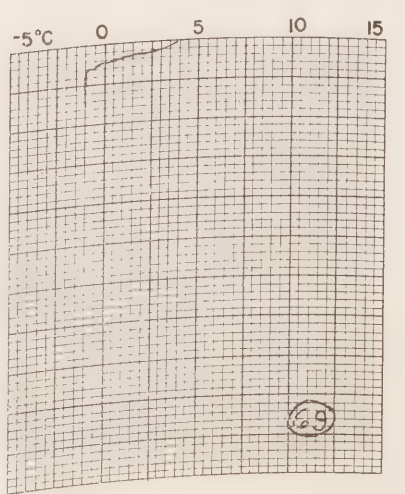
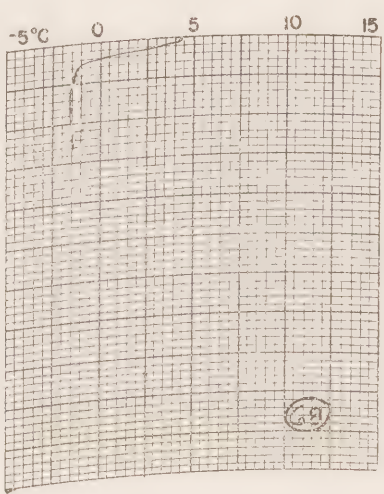
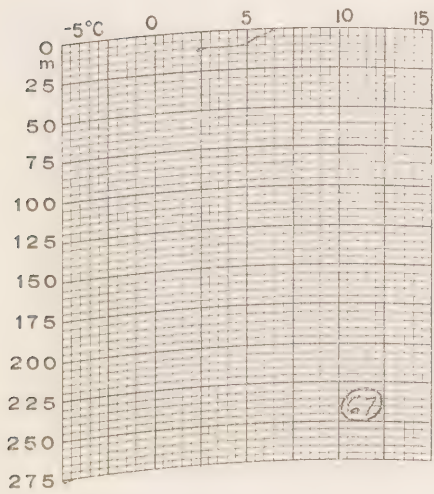
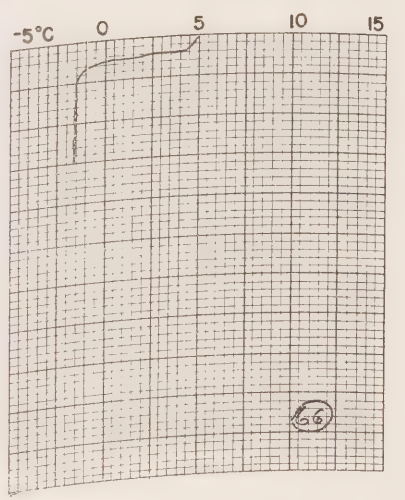
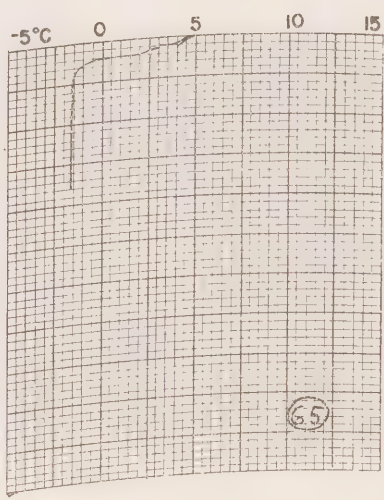
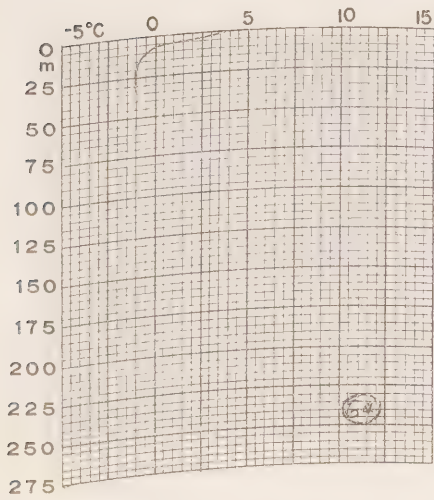
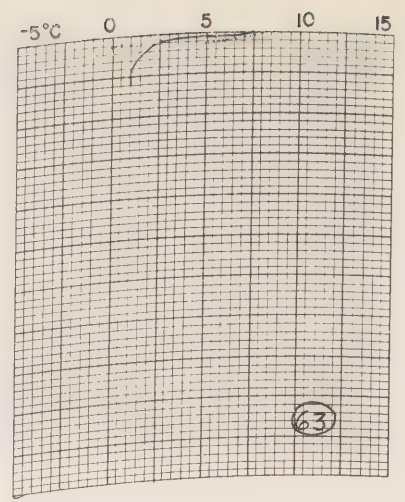
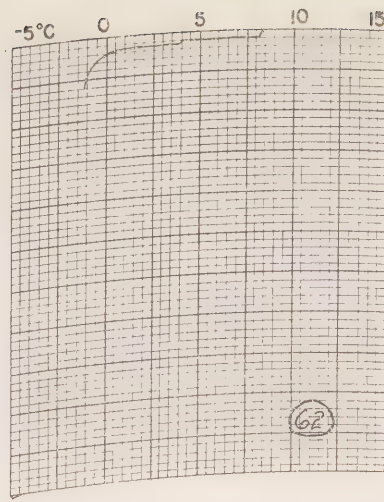
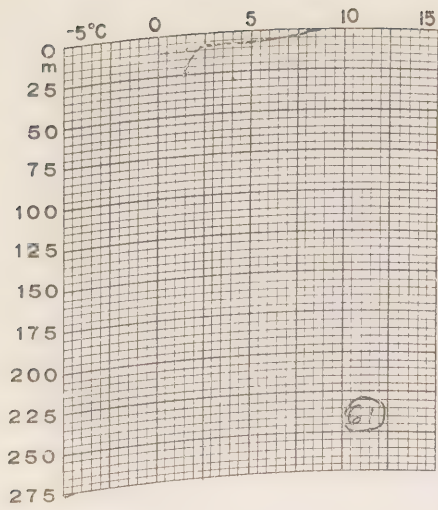


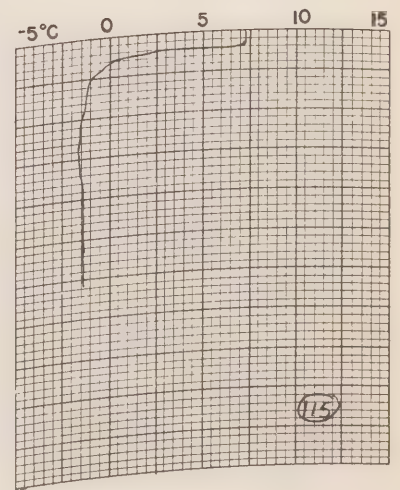
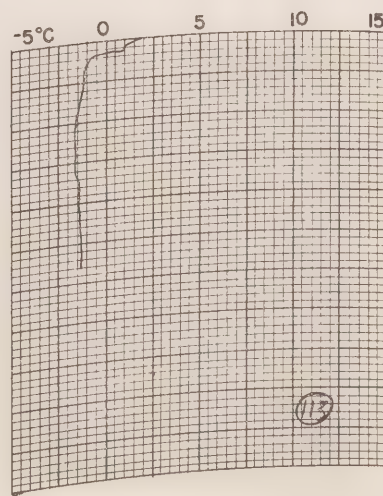
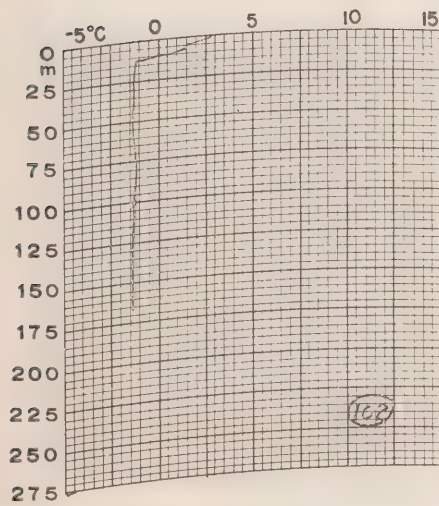
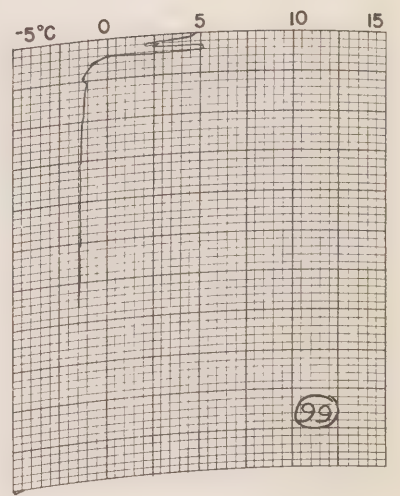
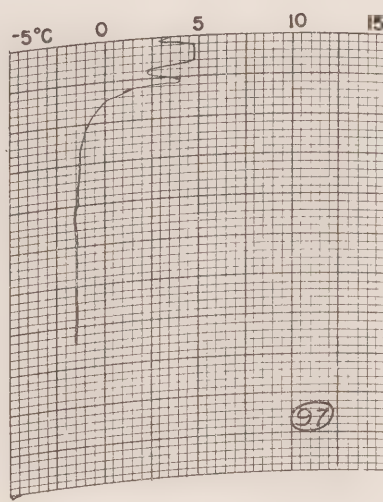
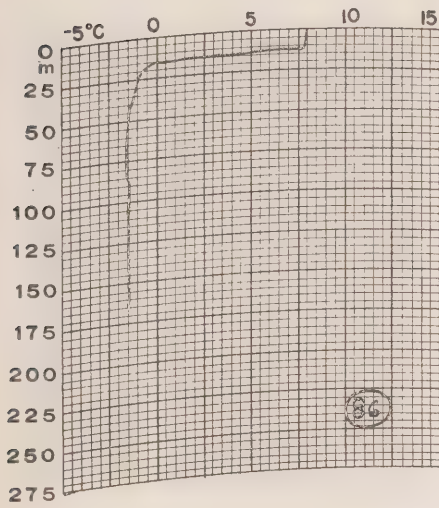
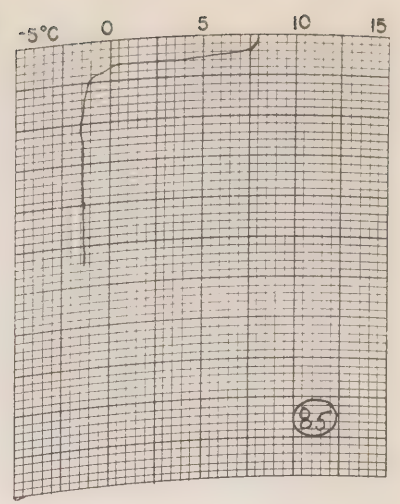
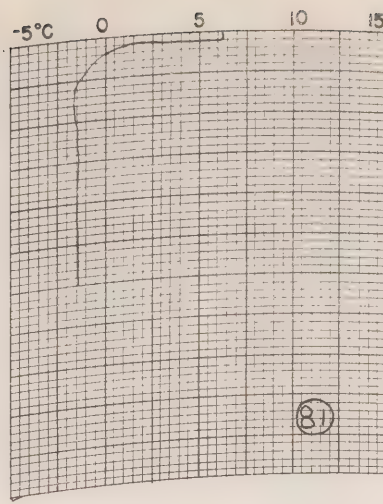
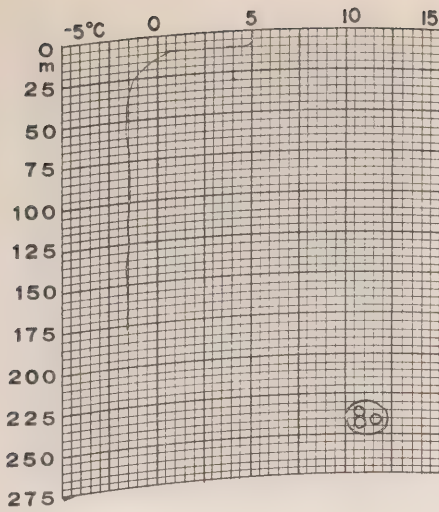


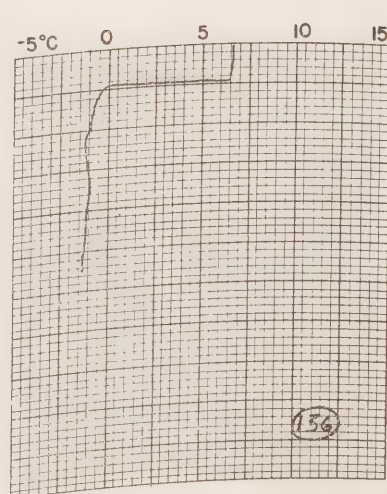
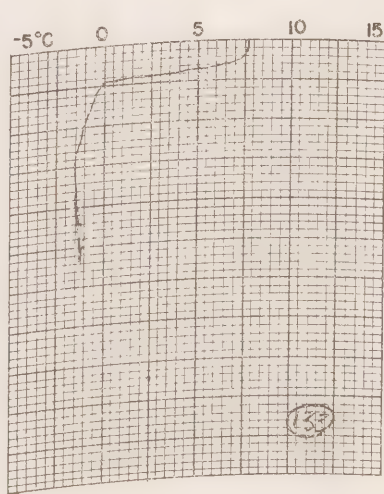
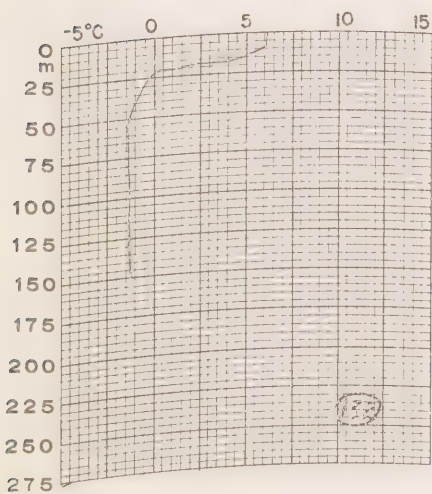
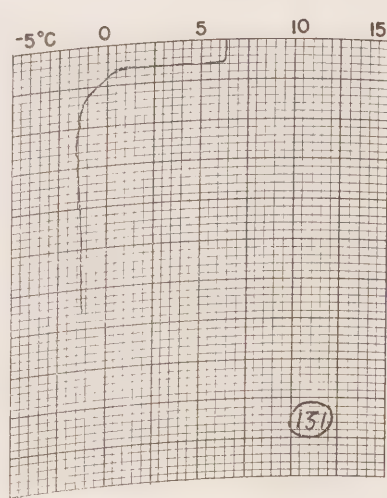
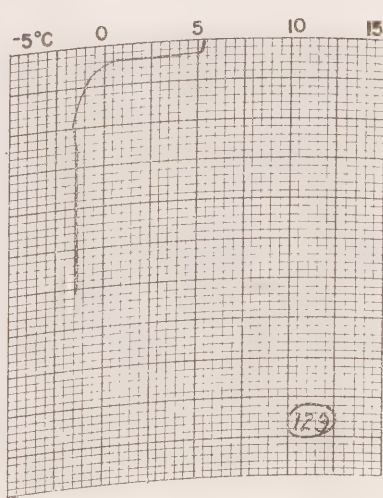
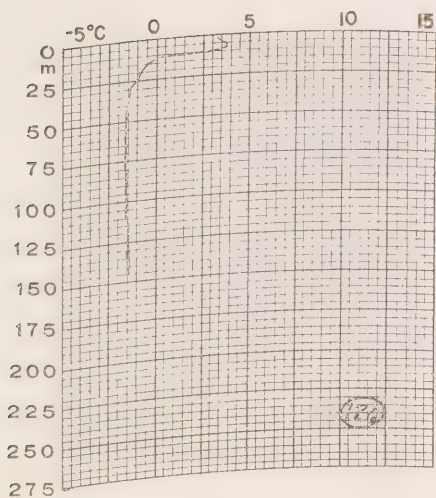
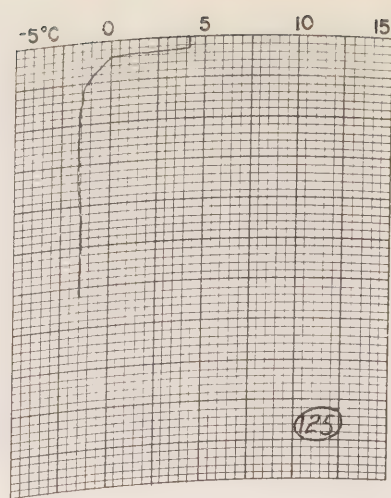
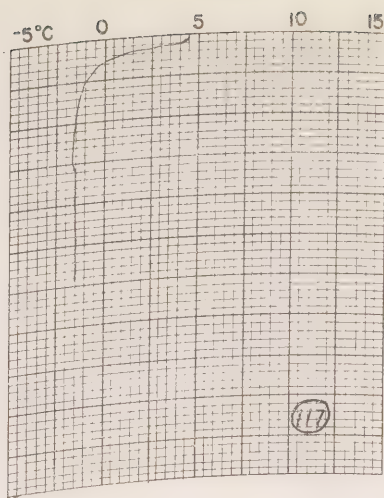
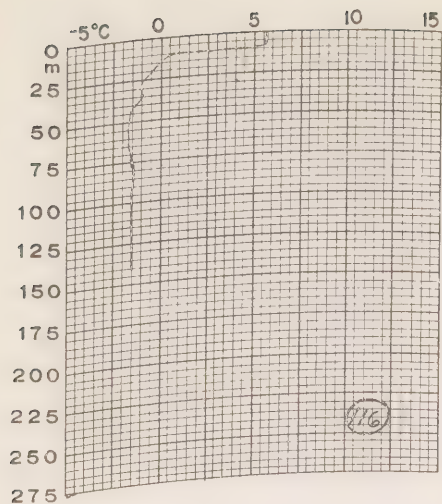


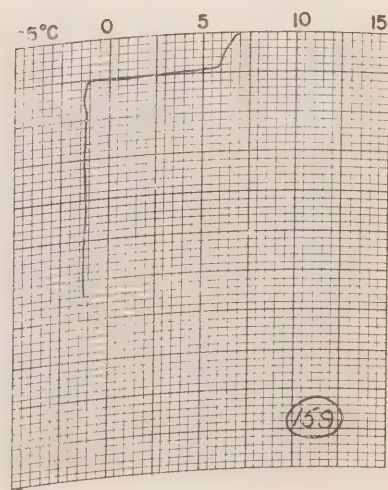
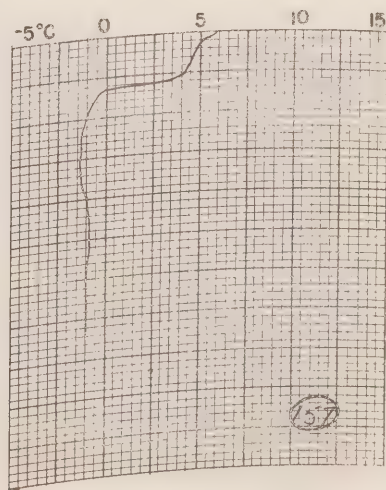
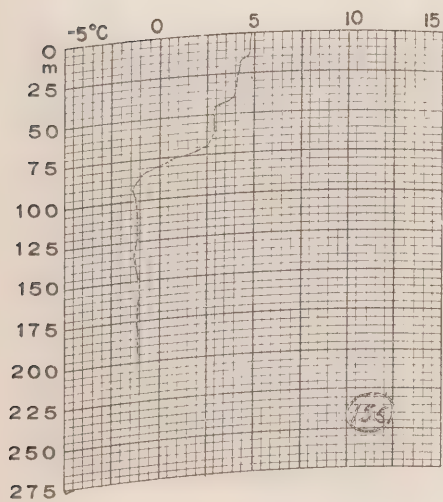
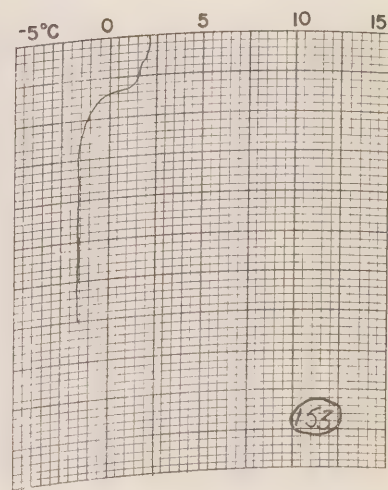
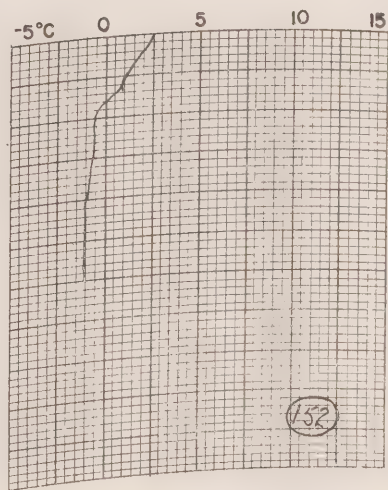
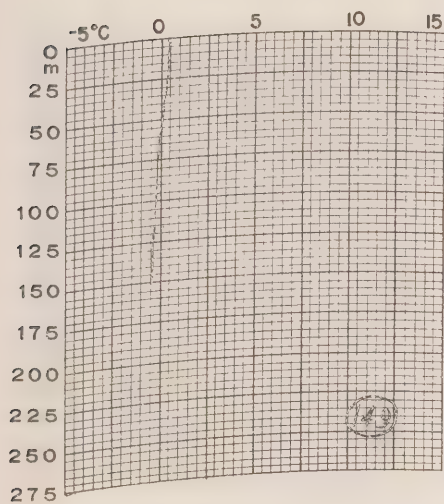
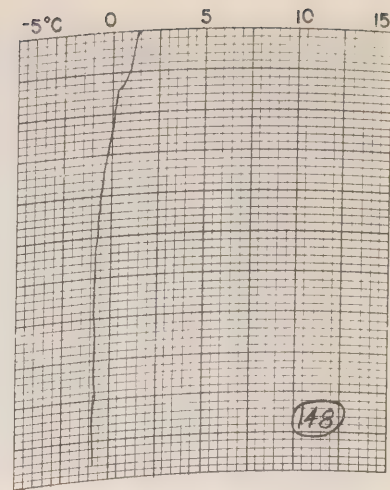
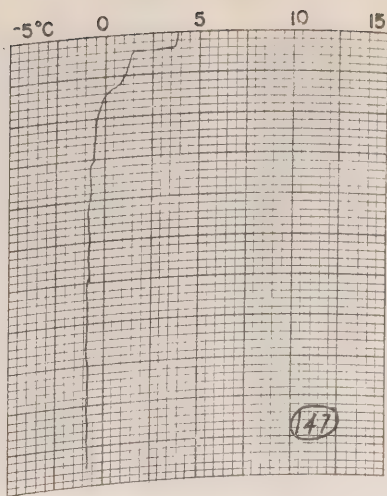
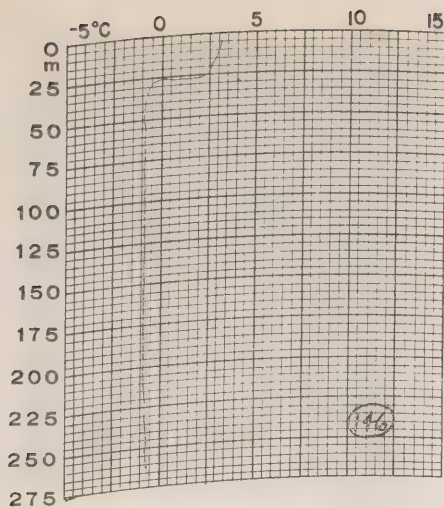


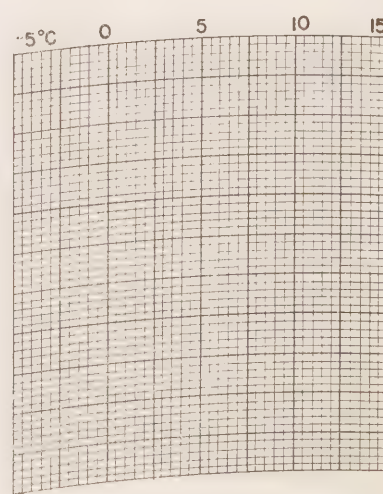
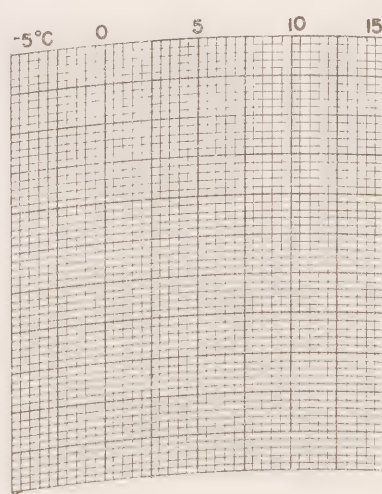
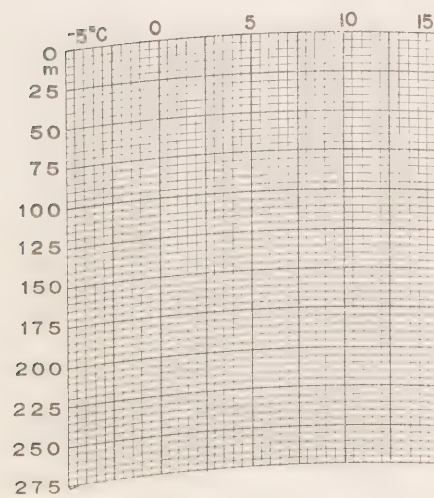
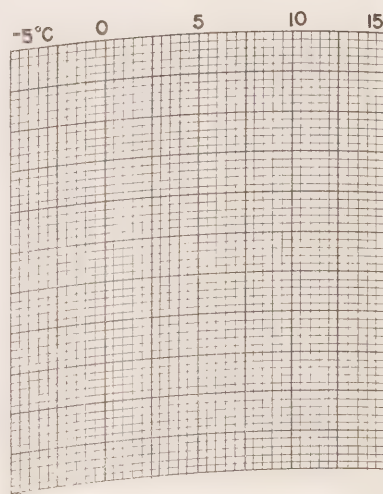
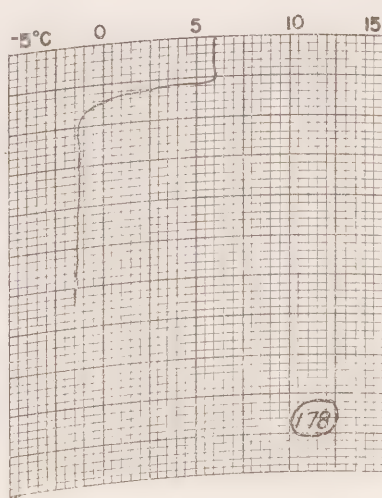
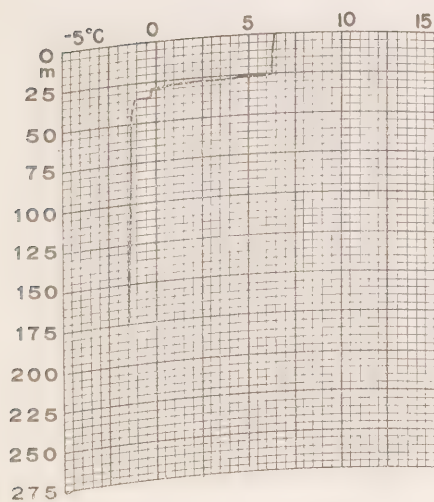
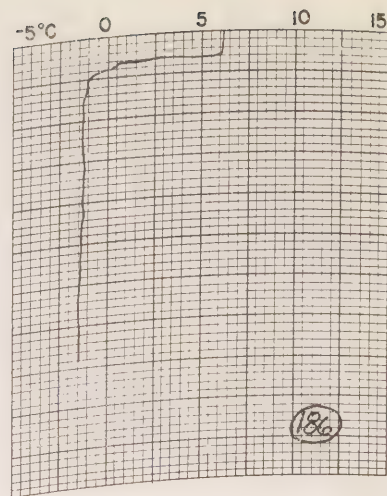
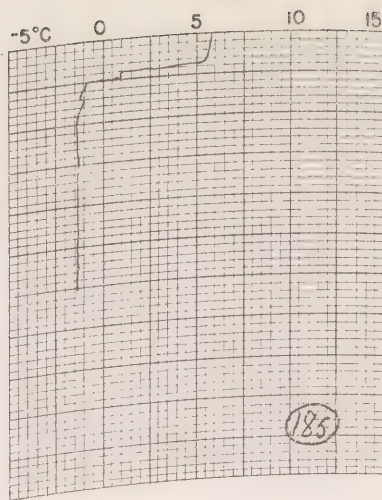
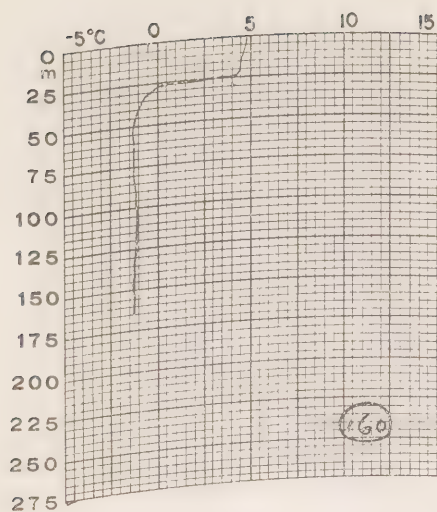




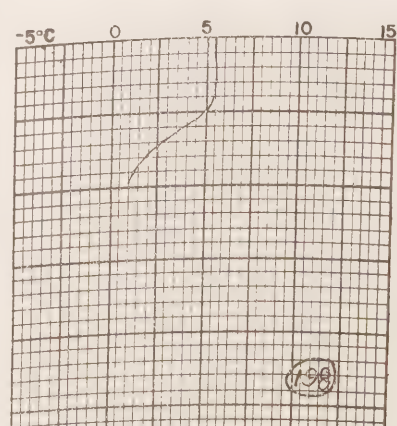
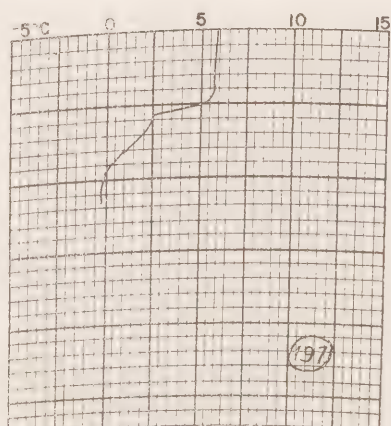
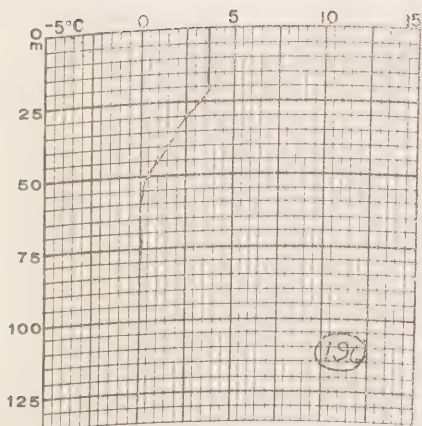
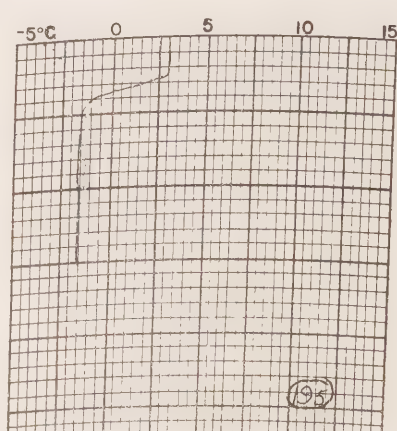
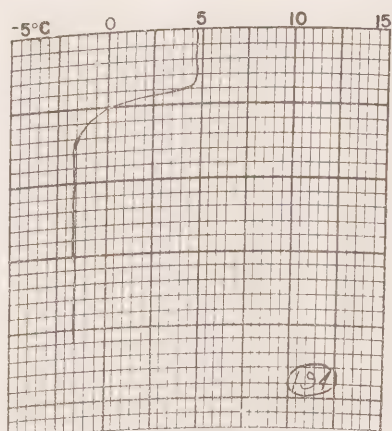
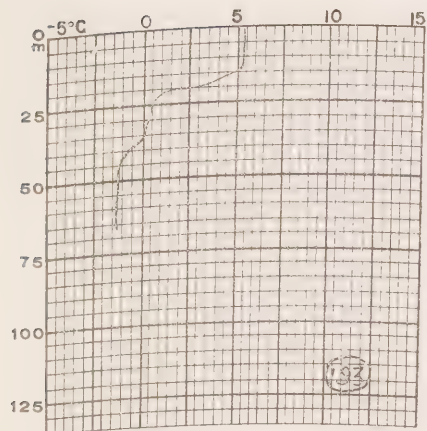
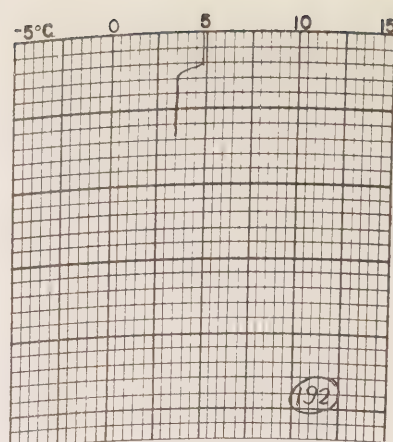
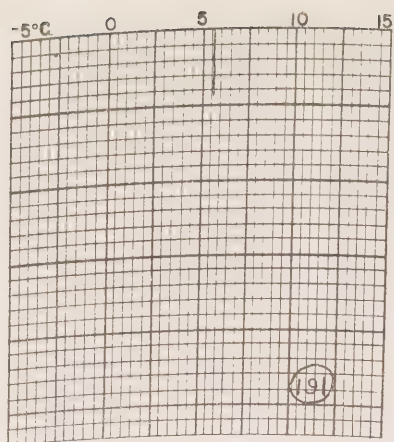
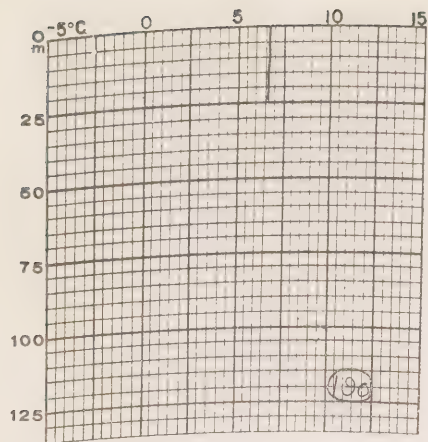


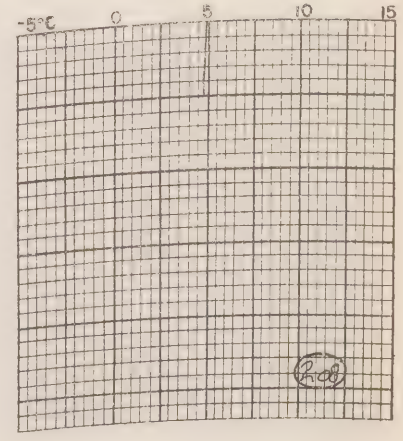
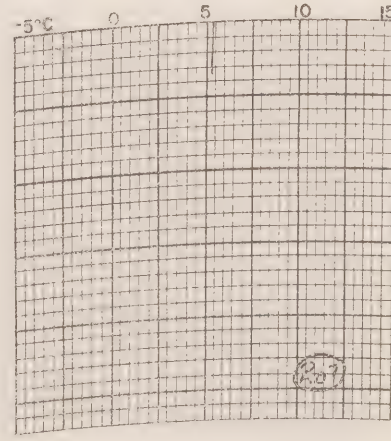
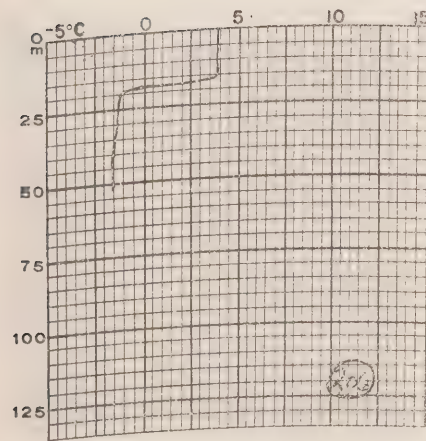
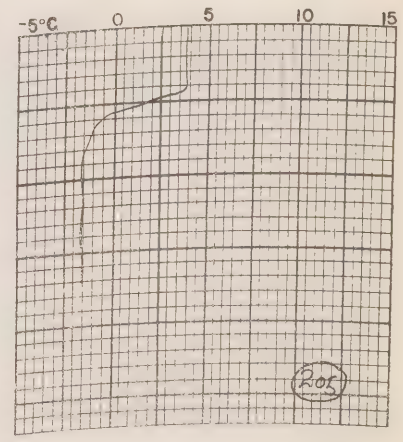
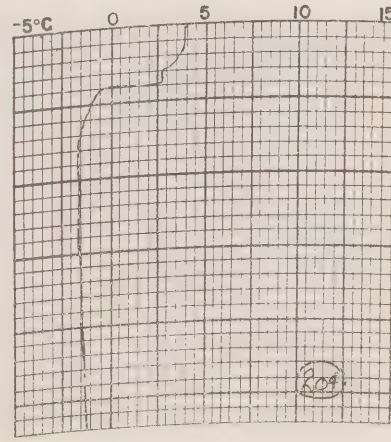
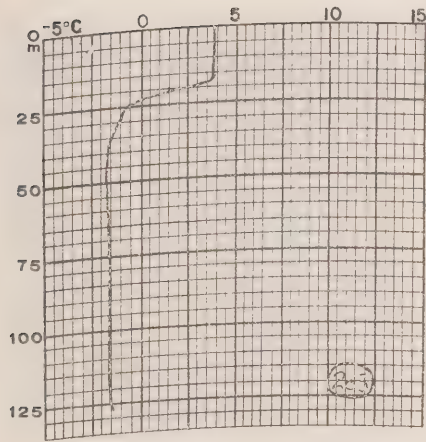
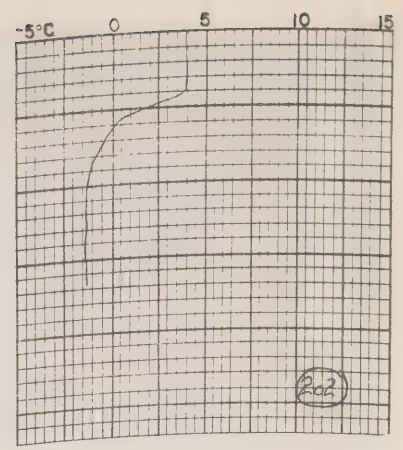
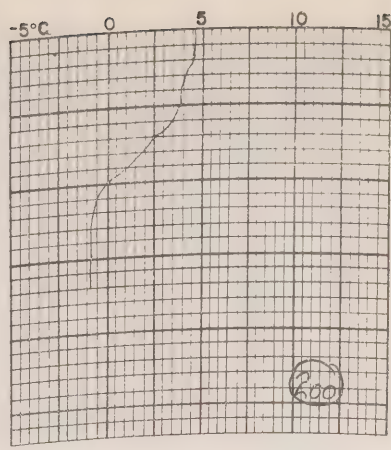
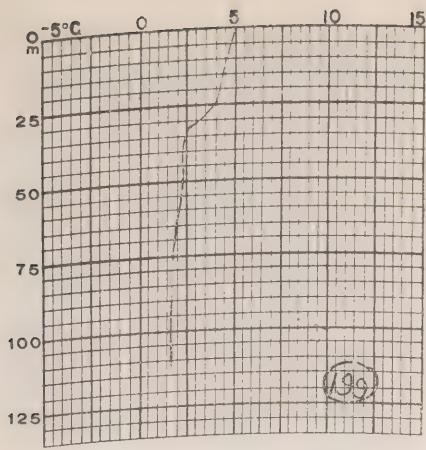


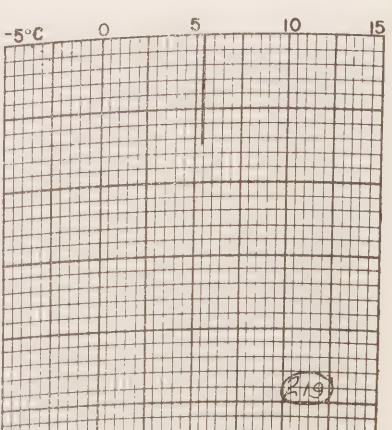
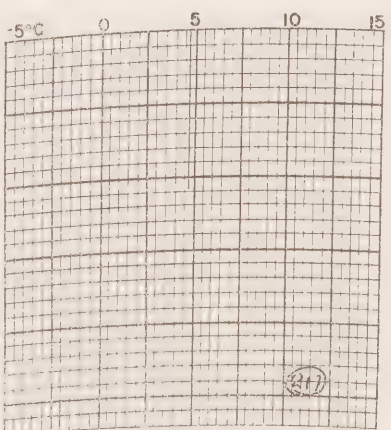
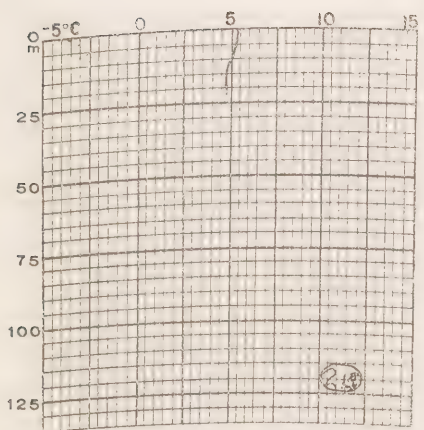
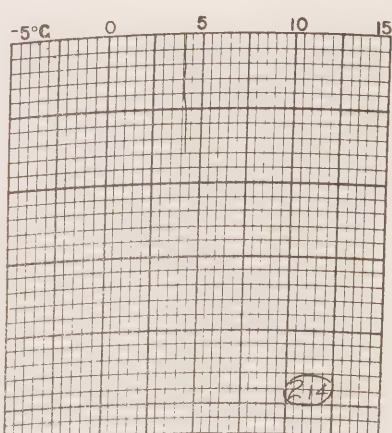
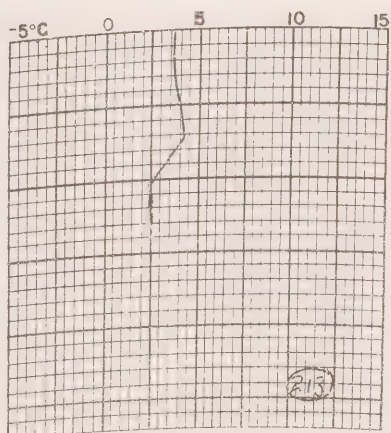
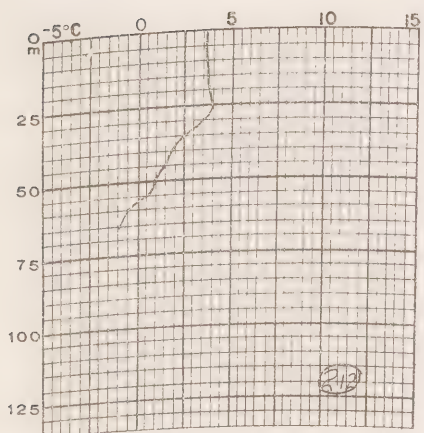
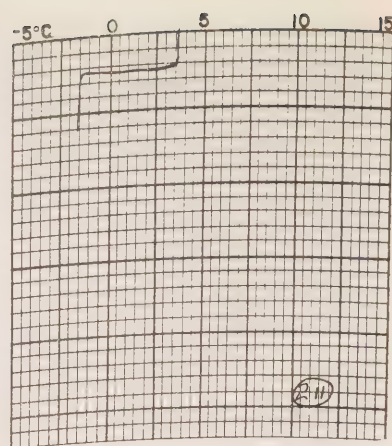
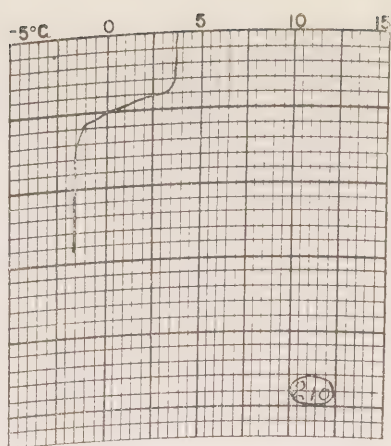
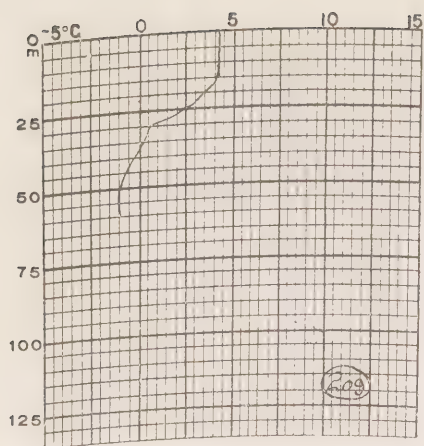


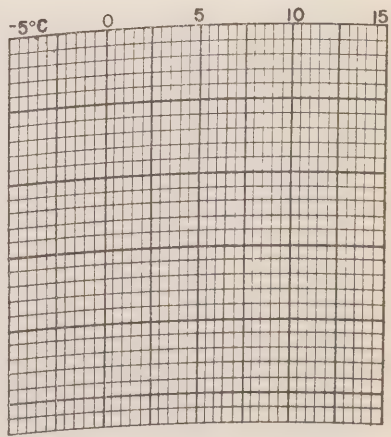
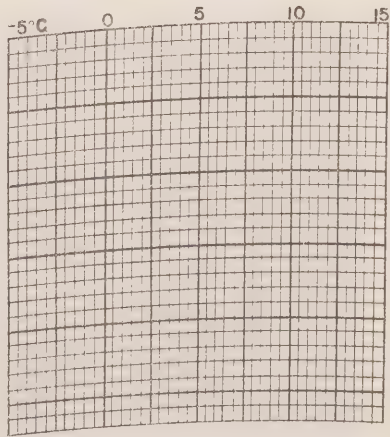
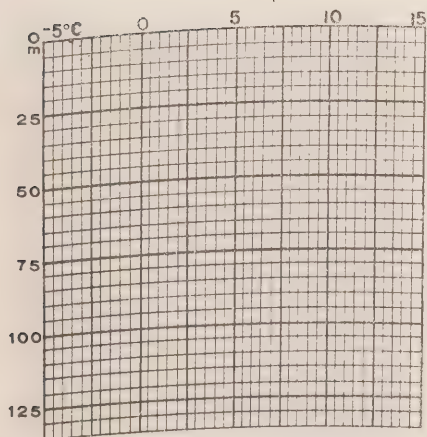
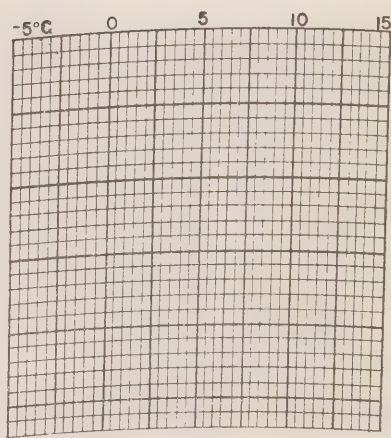
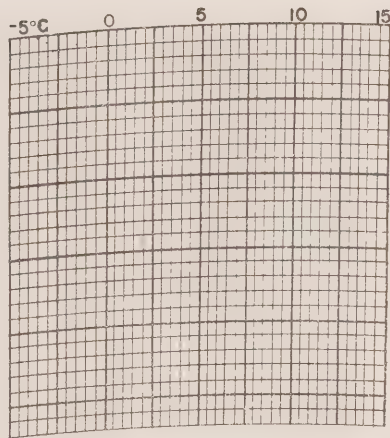
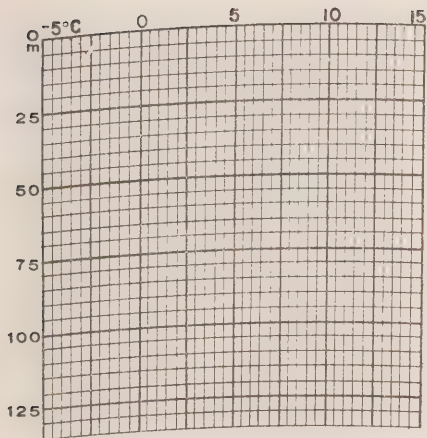
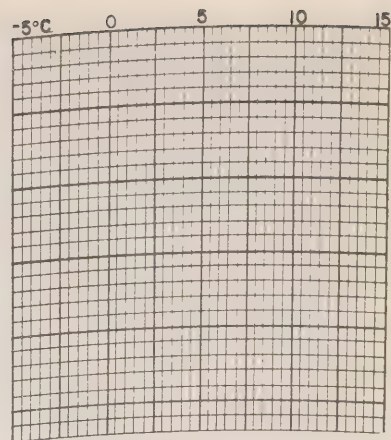
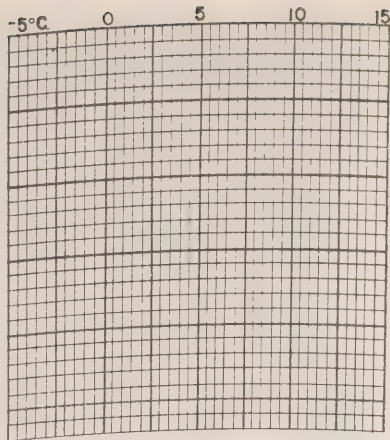
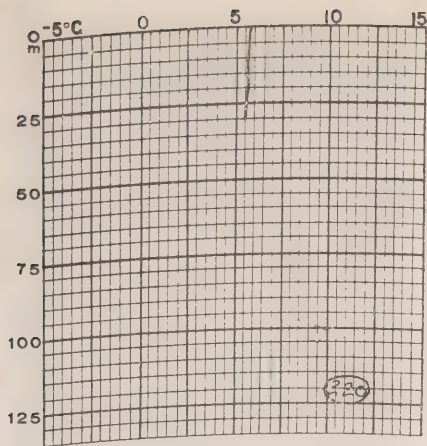


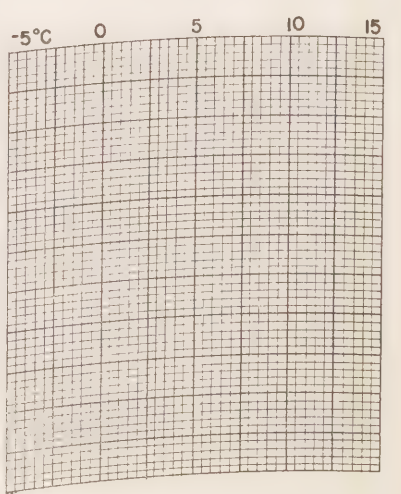
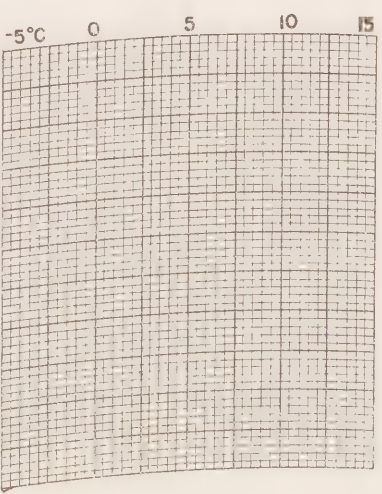
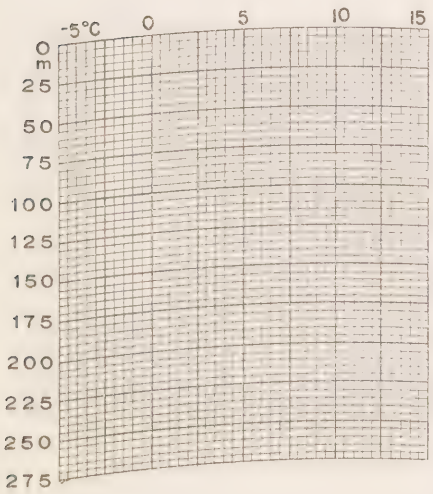
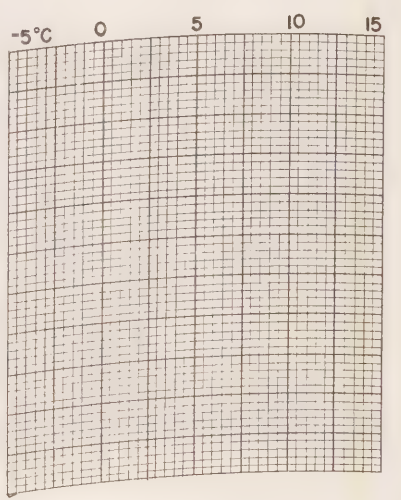
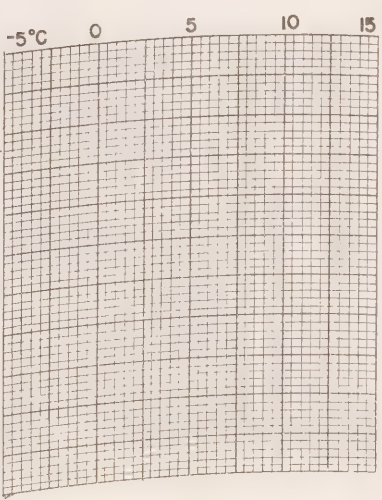
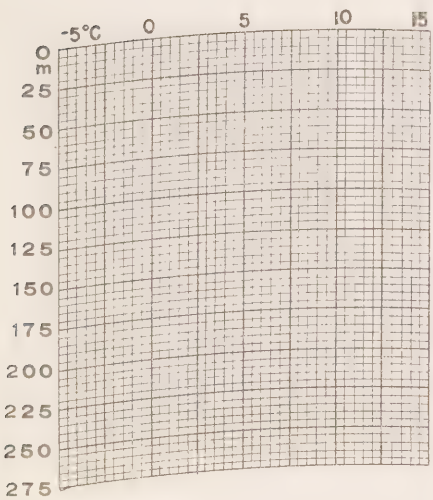
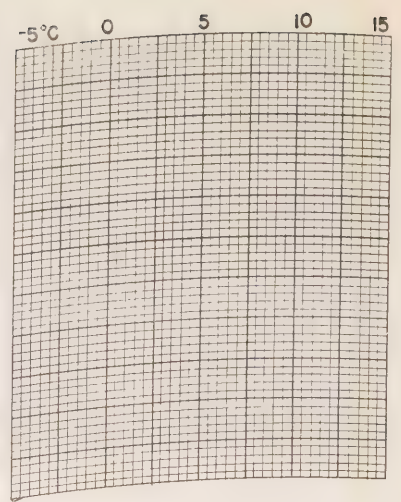
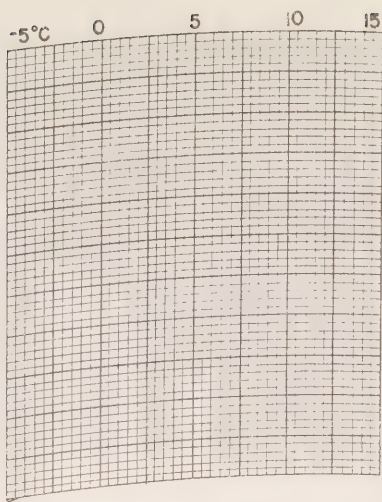
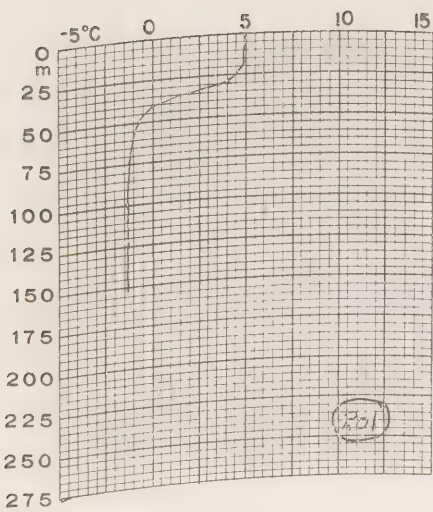
PHASE III



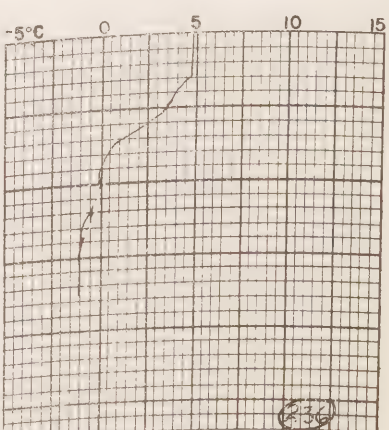
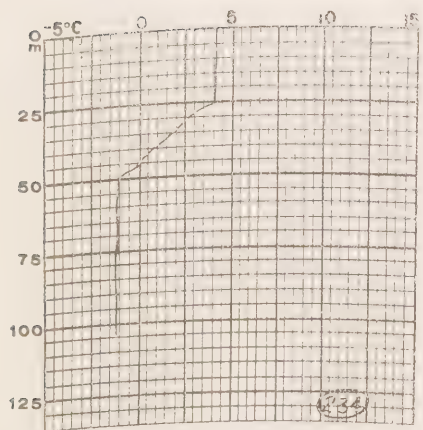
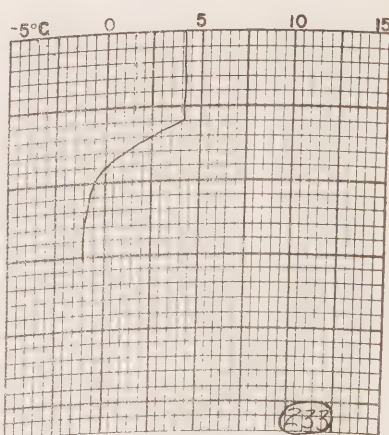
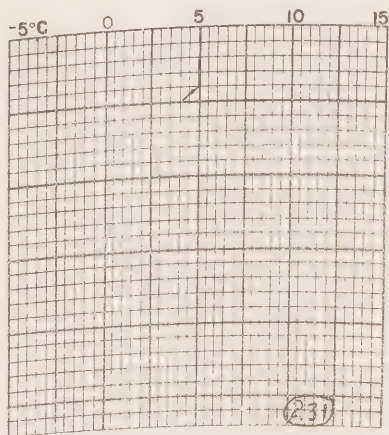
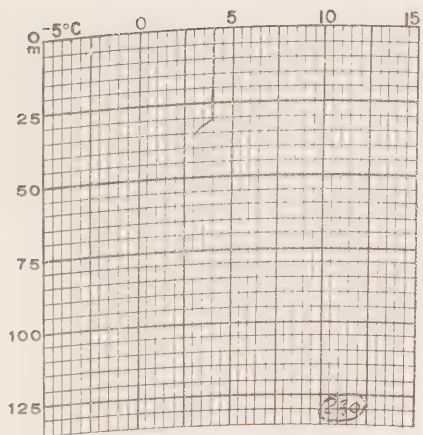
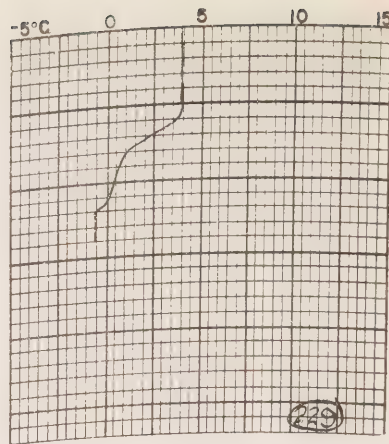
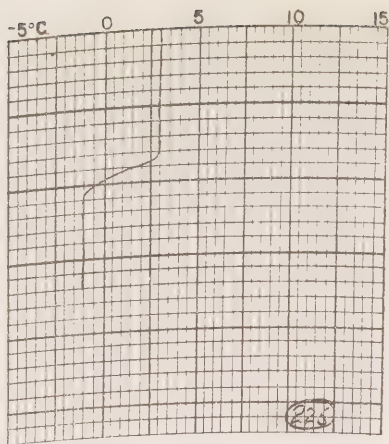
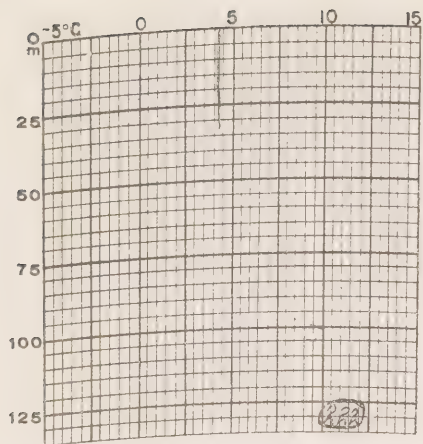


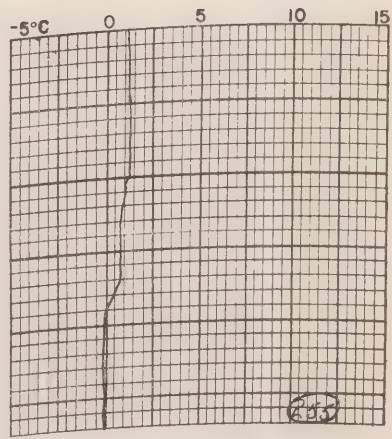
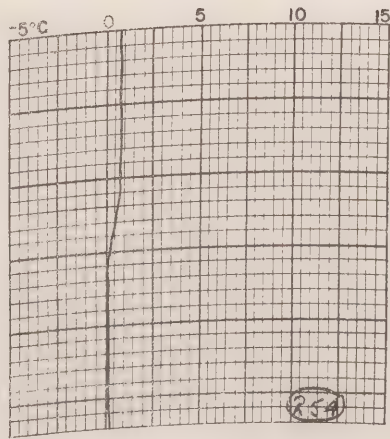
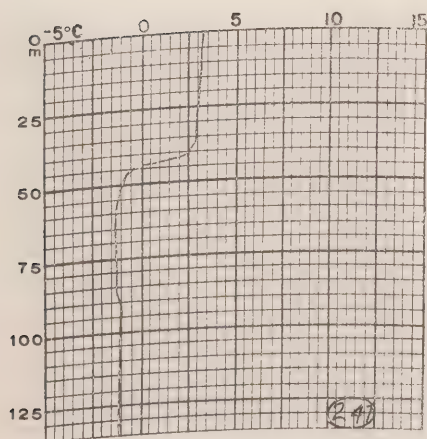
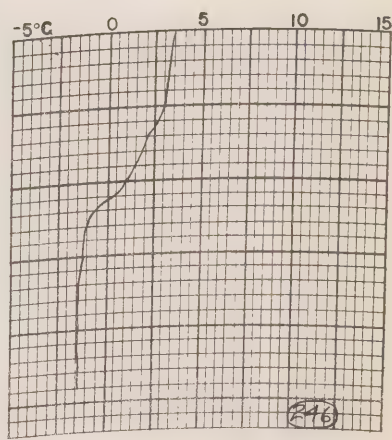
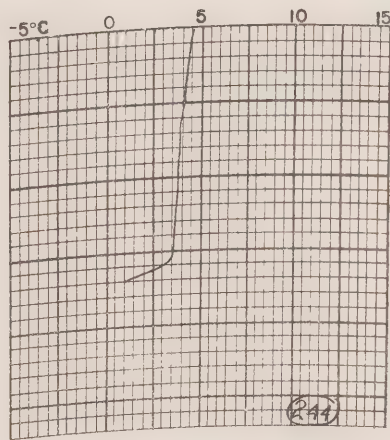
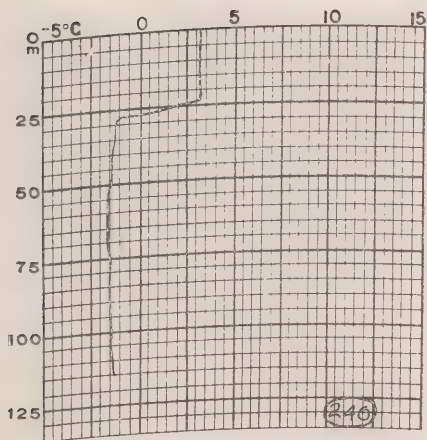
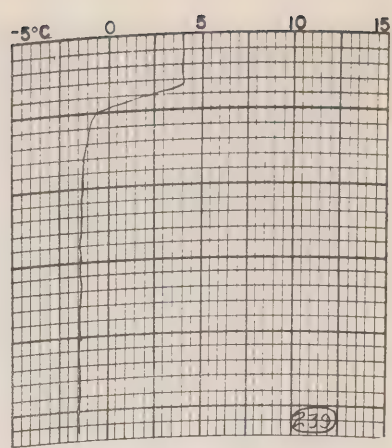
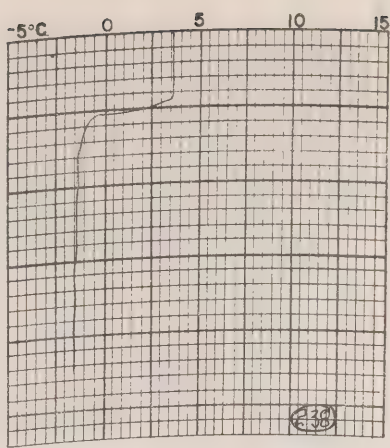
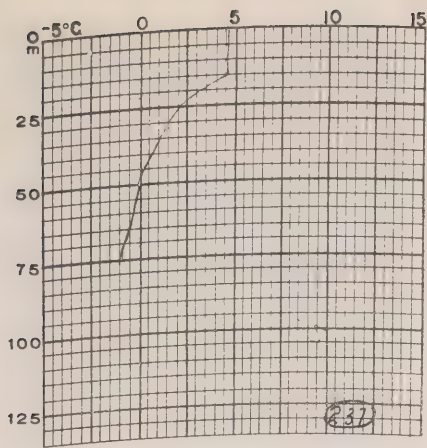


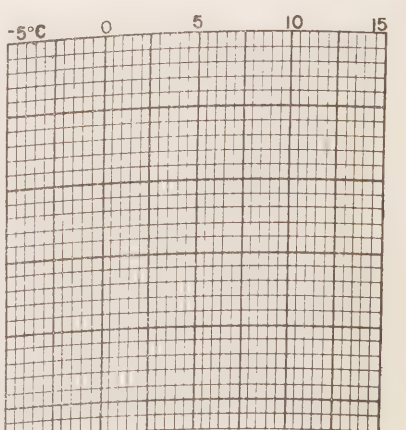
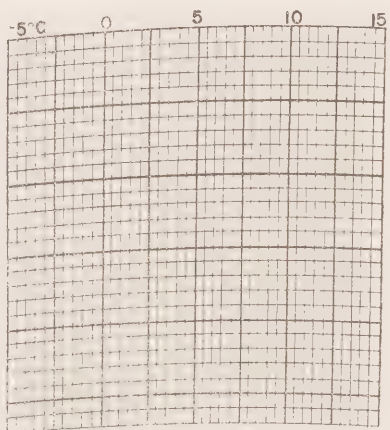
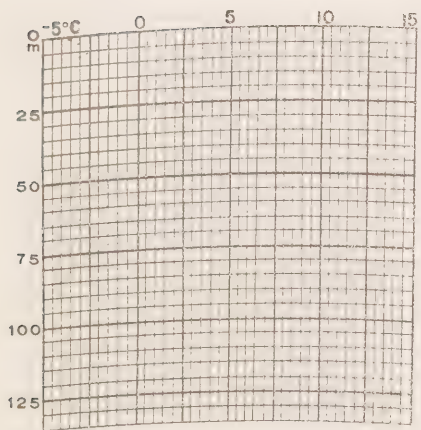
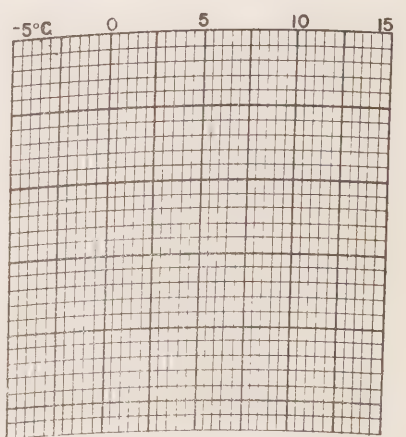
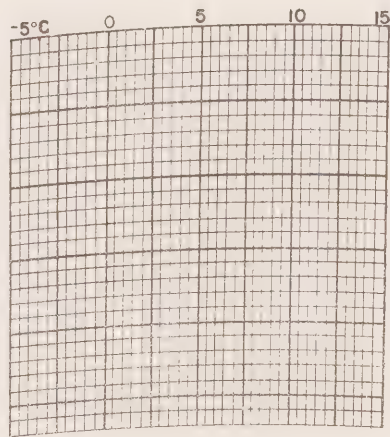
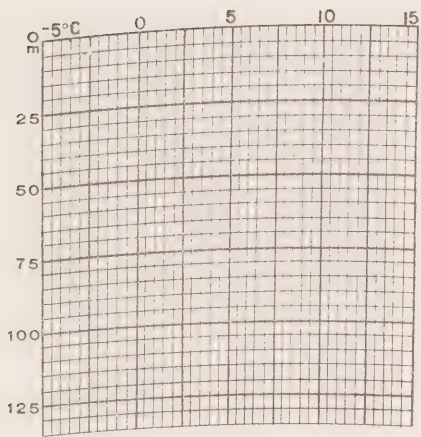
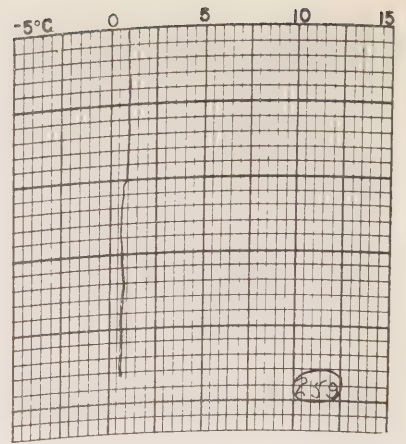
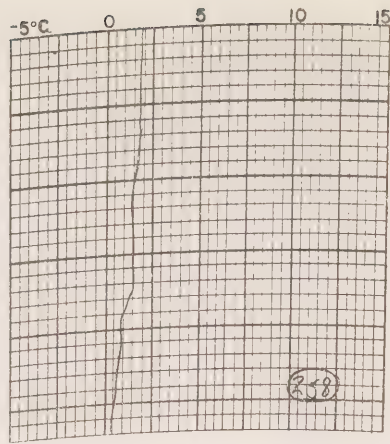
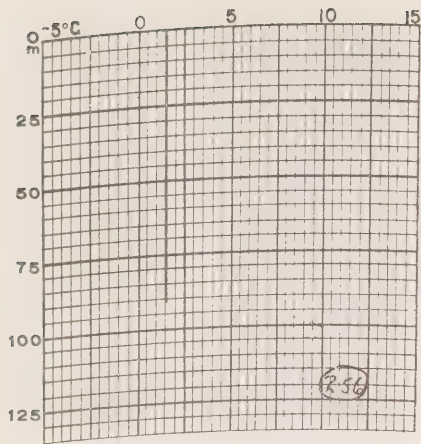


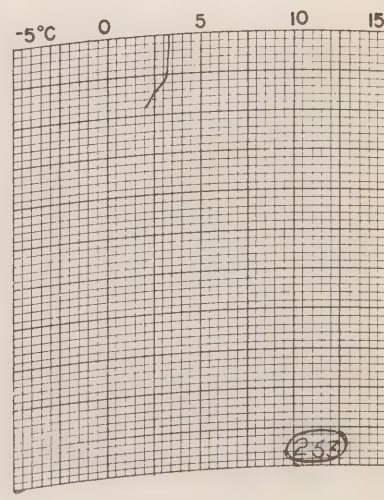
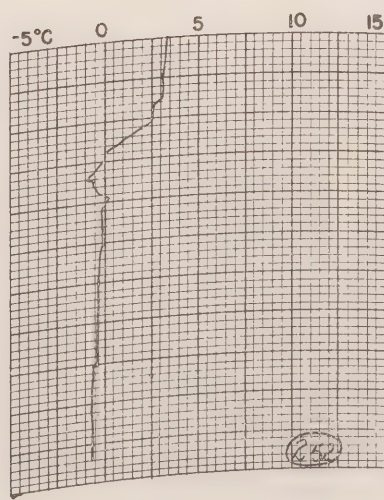
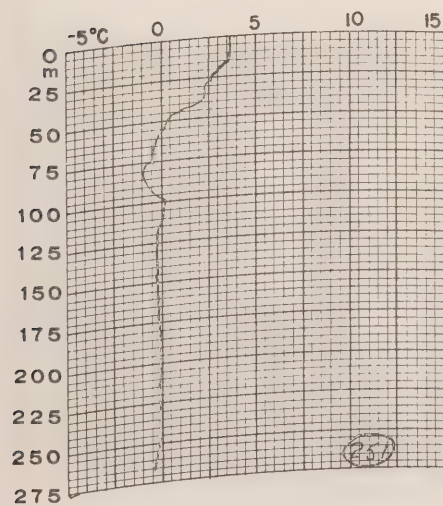
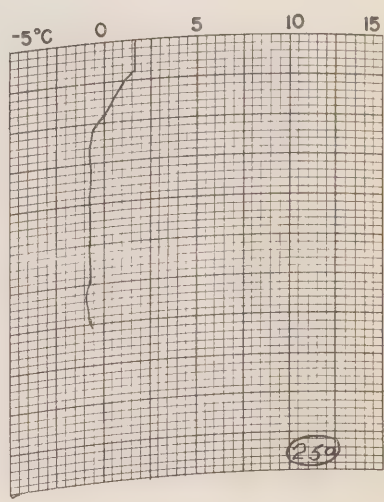
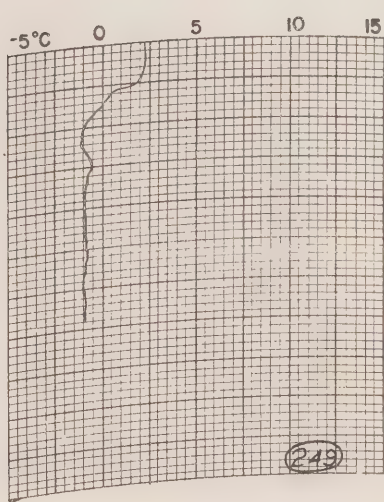
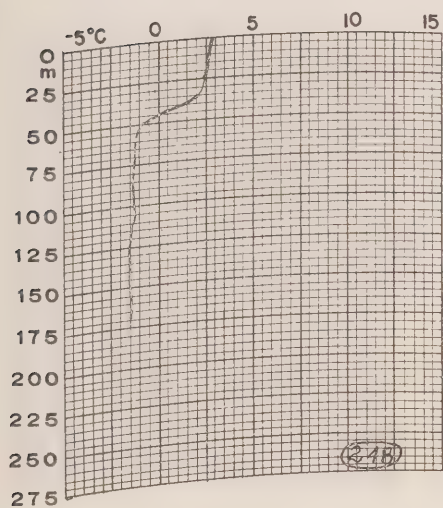
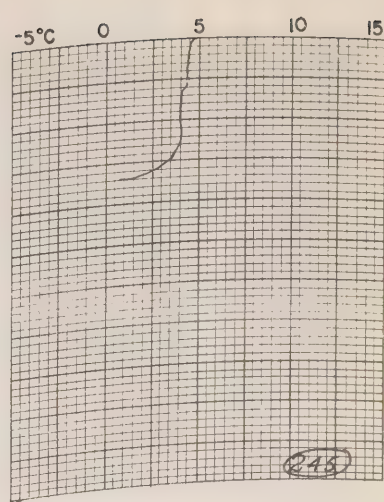
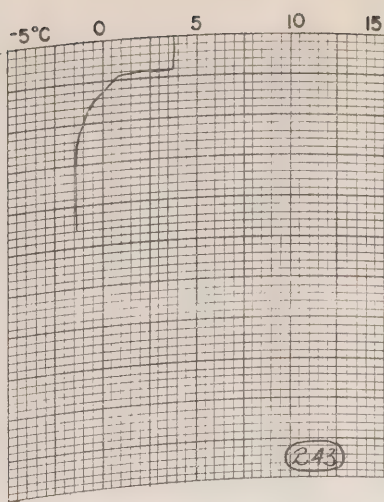
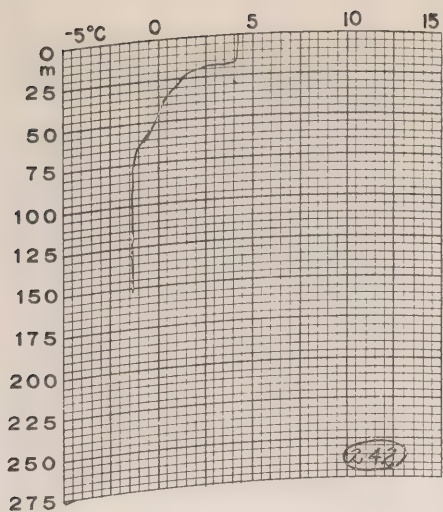


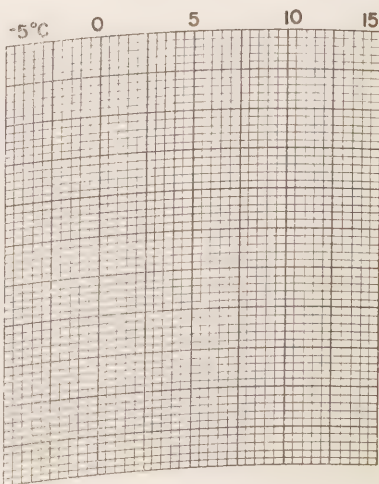
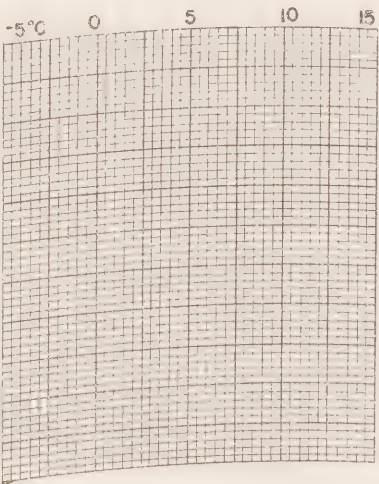
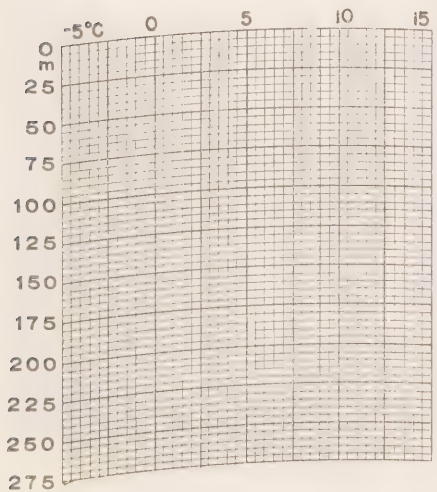
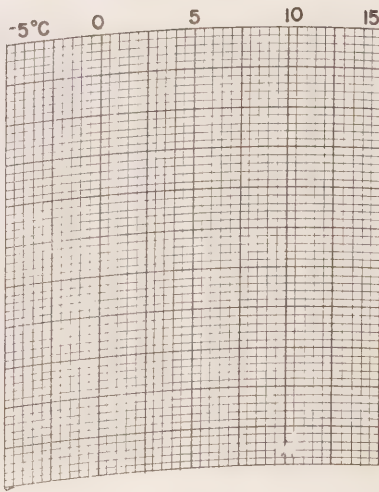
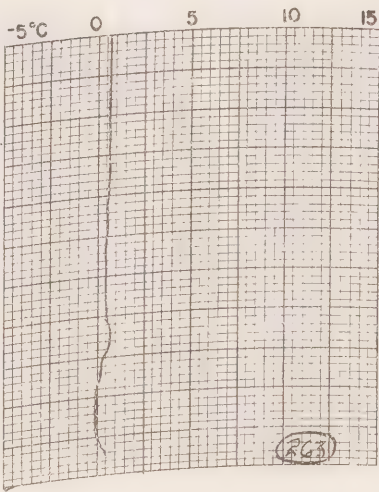
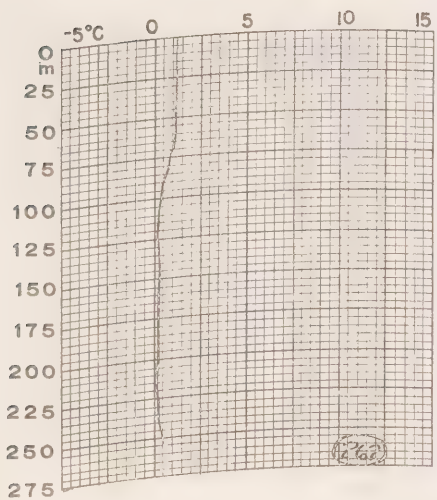
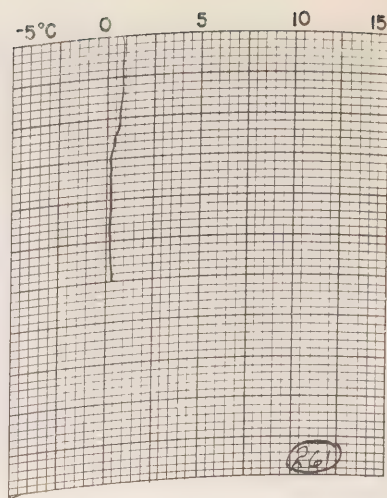
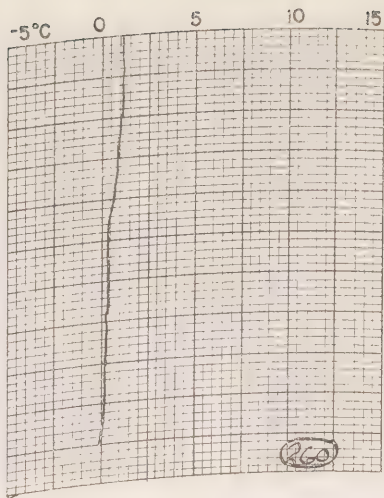
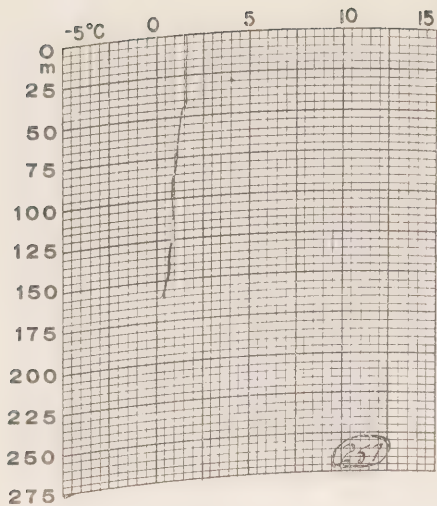
PHASE IV











REFERENCES

- Can. Ocean. Data Centre, 1964 Data Record Series No. 1. Hudson Bay Project - 1961. Queen's Printer and Controller of Stationery Cat. No. M58-1/1964-1.
- Dunbar, M.J., 1949. Calanus, new Arctic research vessel. Arctic, Vol. 2, pp 56-7.
- Ekman, V.W., 1908. Die Zusammendrückbarkeit des Meerwassers nebst einigen Werten für Wasser und Quecksilber. Publ. Circ. Cons. Explor. Mer., No. 43, 47 pp.
- Grainger, E.H., 1960. Some physical oceanographic features of southeast Hudson Bay and James Bay. MS Report Series (O & L) No. 71 Fisheries Research Board of Canada.
1963. Copepods of the genus Calanus as indicators of eastern Canadian waters. Royal Society of Canada. Special Publications No. 5. University of Toronto Press.
- Knudsen, K., 1901. Hydrographischen Tabellen. Copenhagen, 63 pp.
- Strickland, J.H.D. and T.R. Parsons, 1960. A manual of seawater analysis. Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.
- Wilson, W.D., 1960 Equation for the speed of sound in seawater. Journ. Accoust. Soc., America 32 (10); p. 1357.



CANADA

13

GREAT BEAR LAKE, N. W. T. —1963

No. 13

1964 Data Record Series

Canadian Oceanographic Data Centre

**Programmed by the
Canadian Committee on Oceanography**

1964

ROGER DUHAMEL, F. R. S. C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1984

Cat. No. M58-1/1964-13

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4

Data Record

Limnological Survey

GREAT BEAR LAKE N.W.T. - 1963

(C.O.D.C. Reference: 04-63-001)

No. 13

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography

FISHERIES RESEARCH BOARD OF CANADA

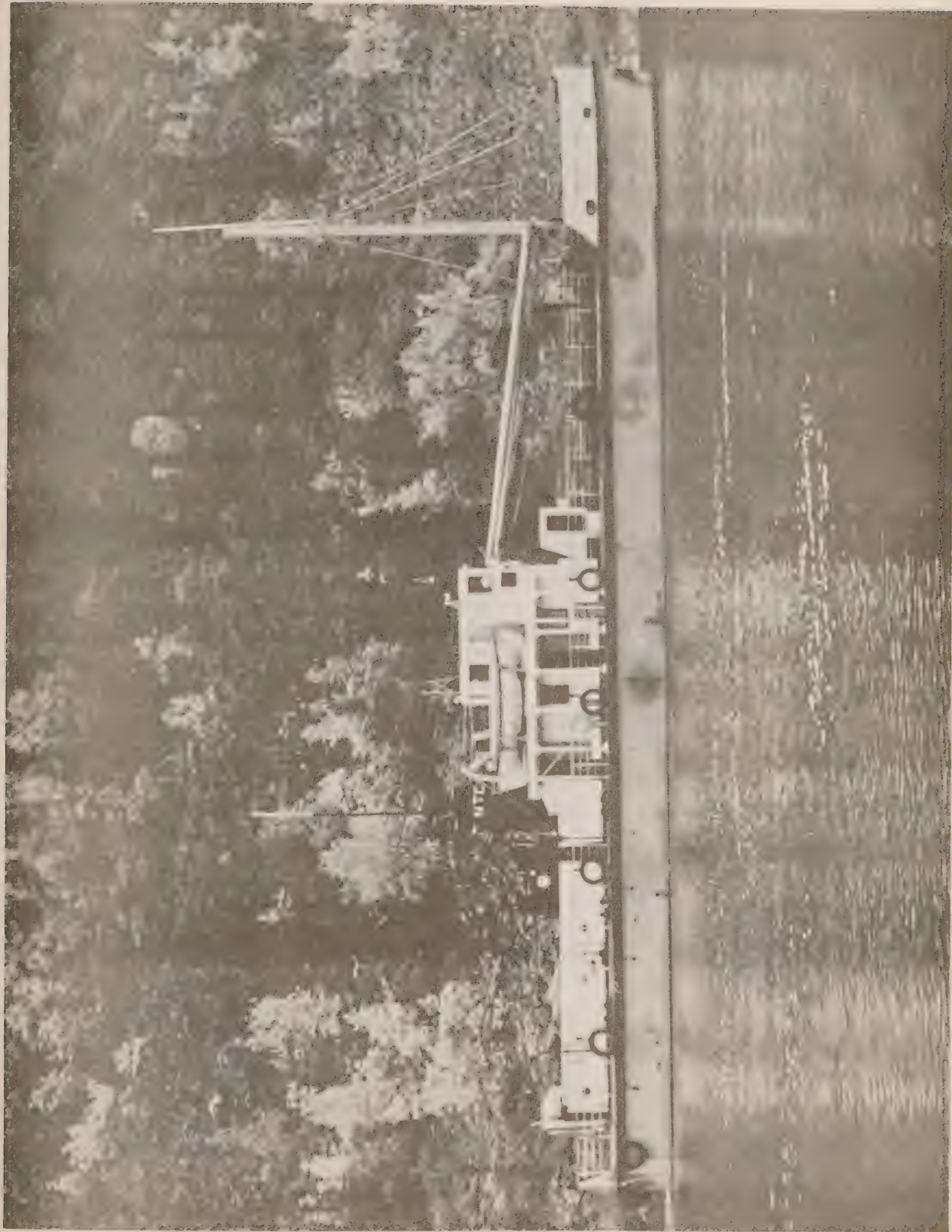
Great Bear Lake, N.W.T. - 1963

Ship:	M.V. "Radium Gilbert"
Period of Survey:	June 22 - September 10, 1963
Observers:	Dr. L. Johnson Mr. C.W. Nicol Mr. K.R. Mills

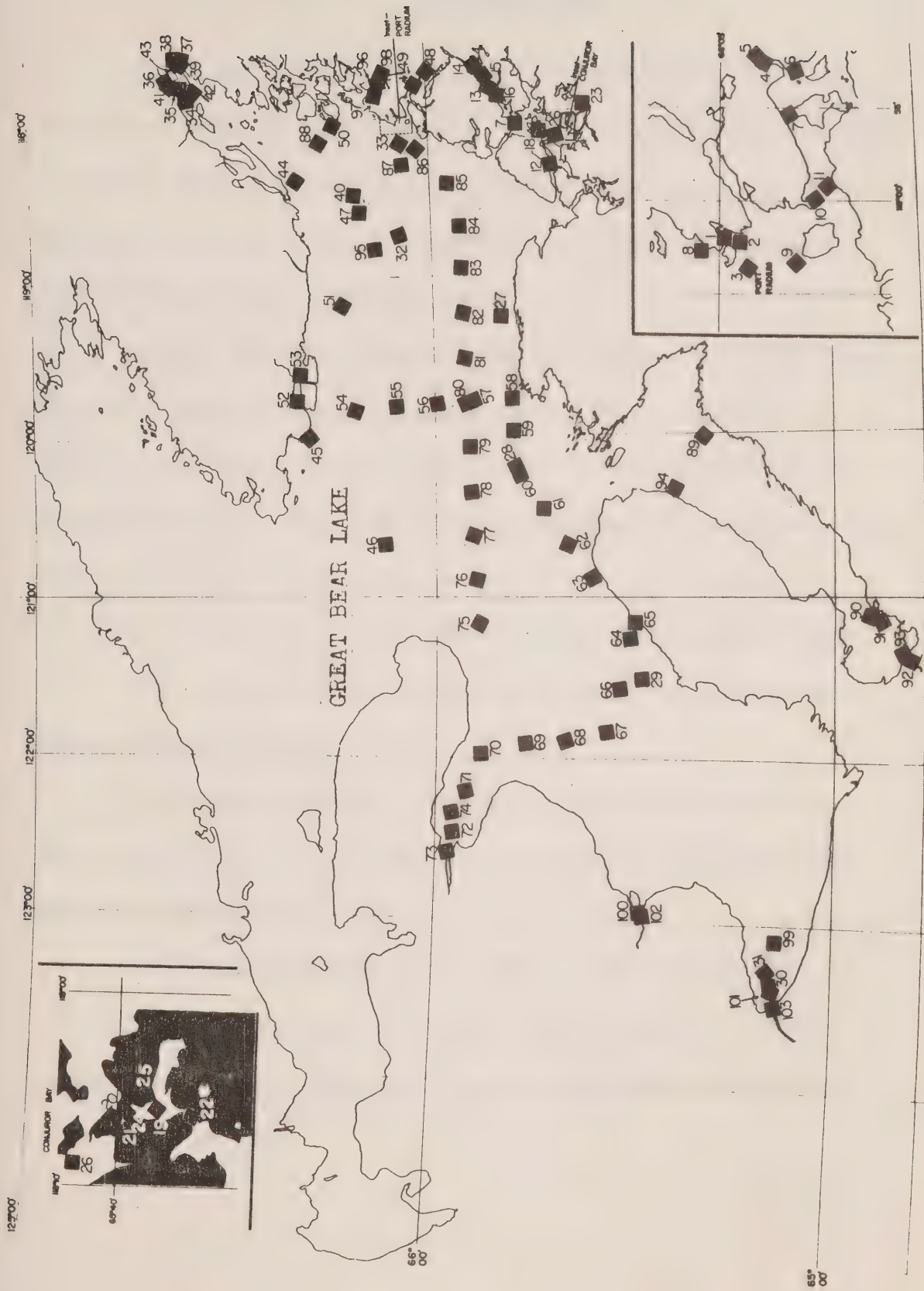
ARCTIC UNIT - Montreal

SECTION I

Description of data collection procedures



M.V. RADIUM GILBERT



Great Bear Lake, N.W.T. - 1963

STATION POSITIONS

INTRODUCTION

Great Bear Lake has an area of 29,500 km² and is the fourth largest lake in North America. It is situated at an elevation of 169 m (515 ft) and has a maximum depth of 427 m (1,410 ft) so that 257 m (840 ft) are below sea level. The deepest part lies about five miles off the eastern end of McTavish Arm along the edge of the Pre-Cambrian shield.

In June 1963 a limnological survey was started on Great Bear using the M.V. "Radium Gilbert", a vessel of 270 tons and 120 ft length, under the command of Captain A. McInnes of the Northern Transportation Company. The ship was fitted with a gasoline/hydraulic oceanographic winch and a Kelvin-Hughes echo sounder for limnological observations, a Mb XV Sperry Gyroscopic compass and a Decca Radar model 212 for navigation purposes.

The programme was carried out by the Arctic Unit of the Fisheries Research Board of Canada.

Great Bear is normally ice-covered from the end of November to the last week in July. In 1963 the season started early and navigation was possible by the 12th July.

One hundred and three stations were occupied: Stations 003, .011, 004, were occupied at regular intervals through the season and represent a gradient from extreme oligotrophy to the most entrophic conditions likely to be found in the lake.

OBSERVATION AND LABORATORY PROCEDURES

In order to meet the conditions of the programme certain changes from the standard oceanographic procedure have been necessary. These changes refer to "Observed Data Headings" in Section II, pp. 20, 21, as follows:

- (1) G.M.T.: No change.
- (2) Depth: No change.
- (3) Temperature: Both reversing thermometer and bathythermograph recordings have been used to obtain the temperatures entered under this head. These can be very largely distinguished by the fact that the reversing thermometer readings are given to two decimal places whereas with BT readings the second decimal place is a "O".

BT data may be obtained from the Arctic Unit of the Fisheries Research Board, Montreal.

- (4) Salinity: Salinity is recorded in only four instances; it is derived from the standard formula

$$S = 0.03 + 1.805 C 1^{\circ} /_{\text{‰}}.$$

No error estimate is given, the additional digit taking its place. Chloride determined by the Industrial Waters Section of the Department of Mines and Technical Surveys, Ottawa.

- (5) Oxygen: No oxygen values are given. Miller and Kennedy (1945) showed that the water at all depths approached a saturation value.
- (6) Sigma-T: No change.
- (7) Sound: No change.
- (8) PO_4 : No change. (Determination by method of Strickland and Parsons 1960.)
- (9) -P-: No change.
- (10) CPL: Chlorophyll content of the water in mg/m^3 .
Determined by the following procedure:

(after Creitz and Richards 1955) a known volume of water was filtered through a Millipore HA filter. The filtered material was washed with magnesium carbonate and dried under reduced pressure at 0°C for a minimum of 24 hours and then extracted with a known volume of 90% acetone for 12 hours at 0°C. The extract was measured in a Klett colorimeter using a red (#66) filter. Then if p is the volume filtered, q is the volume of acetone used and K is the reading of the colorimeter; then the chlorophyll in mg/m^3 is given by:

$$C = \frac{5}{q} \times \frac{1}{p} \times K \times 0.28 \text{ mg/m}^3.$$

- (11) NO_3 : No change. (Determination by method of Strickland and Parsons 1960.)
- (12) SiO_3 : No change. (Determination by D.M. & T.S. Industrial Waters Section.)
- (13) pH: No change. (Determined by use of Beckman Model G pH meter.)

References:

- Creitz, Grace I. and F.A. Richards (1955). The estimation and characterization of plankton populations by pigment analysis. III. A note on the use of the "Millipore" membrane filters in the estimation of plant pigments. Sears Foundation: J. of Marine Res. Vol. 14, No. 3.
- Miller, R.B. and W.A. Kennedy (1945). North-west Canadian fisheries surveys in 1944-45. Fish. Res. Bd. Canada, Bull. 62.
- Strickland, J.D.H. and T.R. Parsons (1960). A manual of sea-water analysis. Fish. Res. Bd. Canada, Bull. 125.

SECTION II

Description of the machine-generated data record

INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct image masters. These masters subsequently yield the required volume of copies for distribution.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFER-
ENCE NUMBER:

Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were occupied.

(3) LATITUDE:

Latitude and longitude give the position of the platform at the time of

(4) LONGITUDE:

observation

(5) MARSDEN SQUARE:

Designates the geographic area code (see marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

CANADIAN OCEANOGRAPHIC DATA CENTRE

18

1 IDENT. CODE		2 LATITUDE (N=+)		3 LONGITUDE (W=+)		5 DATE		6 TIME		7 DEPTH		9 NO. DEPTHS OBS'D.		VESSEL	
COUNTRY	INST.	DEG.	MIN.	1 DEG.	1 MIN.	YEAR	MONTH	DAY	HOURS G.M.T.	1 TO	TO BOTTOM			ENTERED BY	CHECKED BY
1	8														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	34 35
10	WATER	11 WAVES I	12 WAVES II	13 WIND	14 BAROMETER	15 AIR TEMP.	16 WET BULB	17 W.W. CODE	18 CLOUD	19 HOURS AFTER H.W.	20	21 UNASSIGNED	22 CRUISE REFERENCE NUMBER	23 CONSEC. NUMBER	24
COLOUR	TRANS.	DW	DM	PH	HW	DW	PW	HW	DIR.	10	10	10	10	10	1
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
68	69	70	71	72	73	74	75	76	77	78	79	80			
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256
257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272
273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288
289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304
305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336
337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368
369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384
385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448
449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464
465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496
497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512
513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544
545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576
577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592
593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608
609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624
625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656
657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672
673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688
689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704
705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736
737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752
753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768
769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784
785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816
817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832
833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848
849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864
865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896
897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912
913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928
929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944
945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976
977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992
993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008
1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024
1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040
1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072
1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088
1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104
1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120
1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136
1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152
1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168
1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184
1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216
1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232
1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248
1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264
1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280
1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296
1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312
1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328
1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344
1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360
1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376
1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392
1393	1394	1395	1396	1397	1398	1399	1400	1401							

- (9) HOUR: The time (Greenwich Mean Time) at which the Master-card data were recorded.
It is reported to tenths of hours (Table 1).
If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.
- (10) DEPTH: The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".
- (11) MAXIMUM
SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).
00 m - 50 m = 00
51 m - 150 m = 01
151 m - 250 m = 02
etc.
- (12) NUMBER OF
DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).
- (14) WATER
TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;
- NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.
- (15) WAVES 1
($d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.
- (18) WIND FORCE
(WND-FCE): Beaufort Notation (See Table 6).
- WIND SPEED
(WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.
- (19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.

- (20) AIR TEMPERATURE: In degrees Celsius.
- (21) WET BULB: In degrees Celsius.
- (22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700
- (25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.
- (26) STATION: A station reference number, assigned by the institute prior to, or during the survey.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO_4	(9) -P-	(10) CPL	(11) NO_3	(12) SiO_2
				(13) pH.	

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

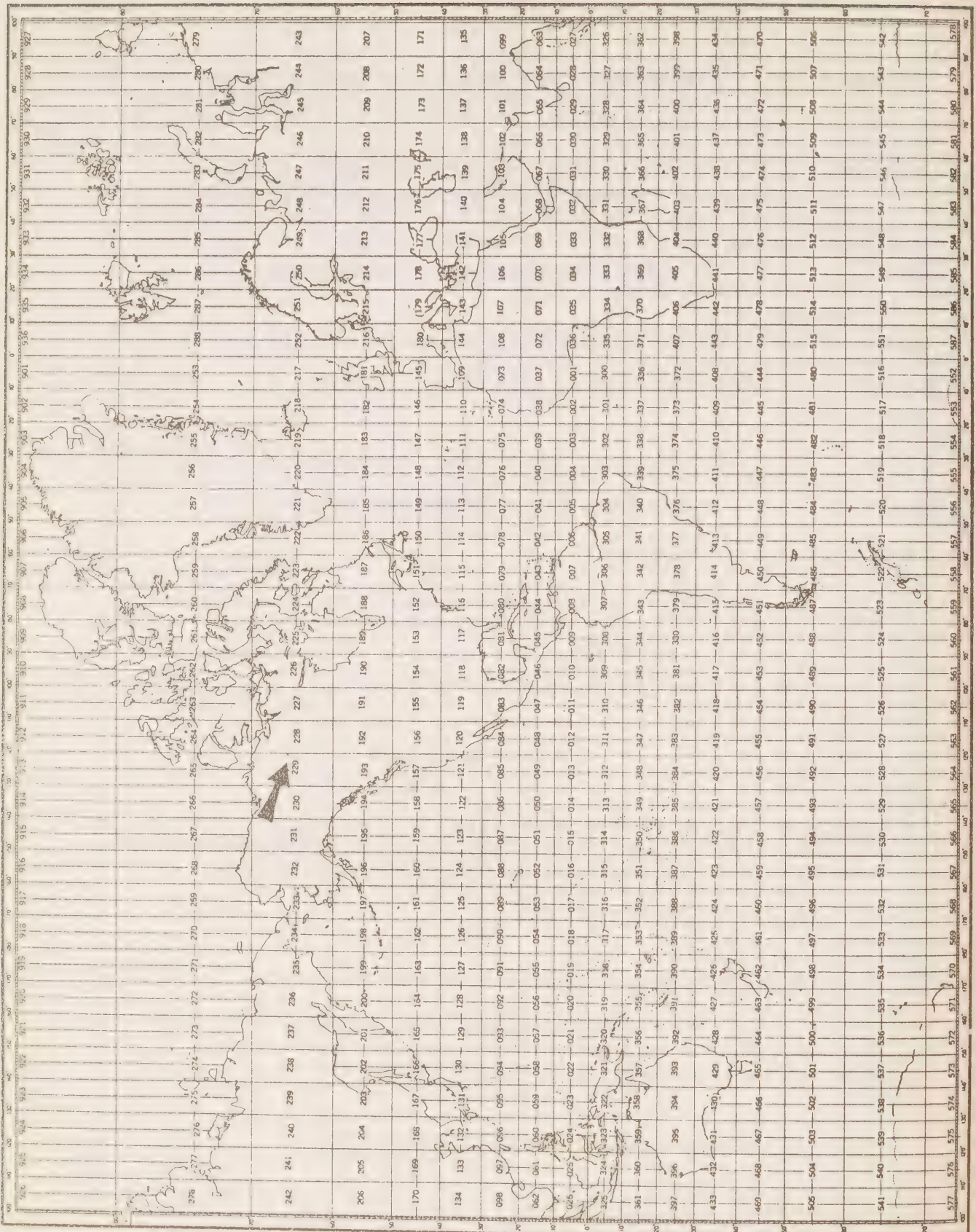
- (1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.
- When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.
- (2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.
- (3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section.
- (4) SALINITY: Salinity as defined by: $S = 0.03 + 1.805 C1\%$, reported in: 1/1000 parts per 1000.
- (5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places.

- (6) SIGMA-T: The specific gravity anomaly as defined by: $(\text{Specific gravity} - 1) \times 10^3$ (e.g., σ_t reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).
- (7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.
- (8) PO₄ Phosphate – Phosphorus reported to hundredths of microgram-atoms per litre.
- (9) -P- Total Phosphorus reported to hundredths of microgram-atoms per litre.
- (10) CPL Chlorophyll content of the water, in mg/m³
- (11) NO₃ Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
- (12) SiO₂ Silicate-Silicon reported in whole microgram-atoms per litre.
- (13) pH The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value
 $<$ the standard deviation of measurement for that particular
 variable.

SPECIAL CHARACTERS

† (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs



MARSDEN SQUARE CHART

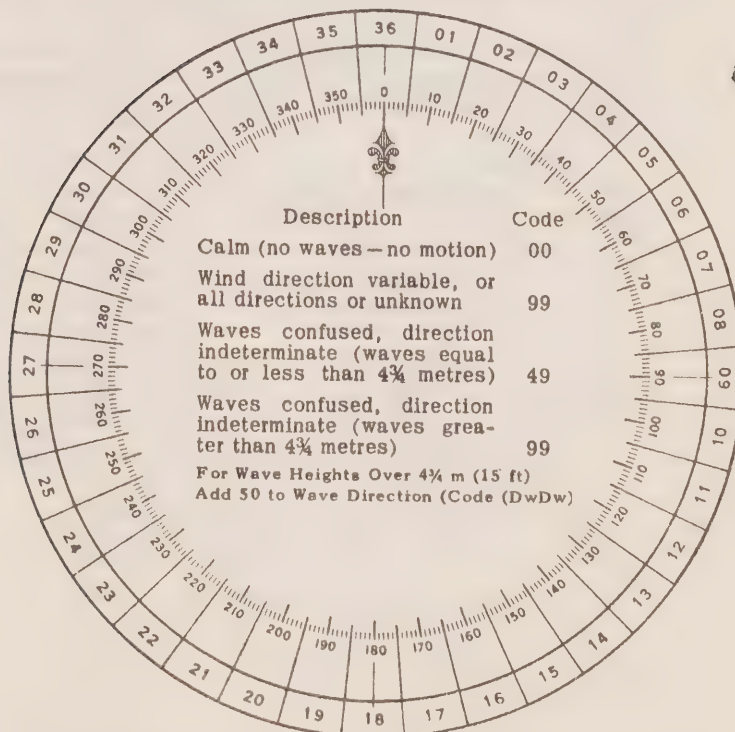
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Green
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (Pw)

(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (Hw)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww			
No meteors except photometers	00	Cloud development not observed or not observable	
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
Haze, dust, sand or smoke	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	

ww = 20 - 29		Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation
20	Drizzle (not freezing) or snow grains	not falling as shower(s)
21	Rain (not freezing)	
22	Snow	
23	Rain and snow or ice pellets, type (a)	
24	Freezing drizzle or freezing rain	
25	Shower(s) of rain	
26	Shower(s) of snow, or of rain and snow	
27	Shower(s) of hail, or of rain and hail	
28	Fog or ice fog	
29	Thunderstorm (with or without precipitation)	
ww = 30 - 39		Duststorm, sandstorm, drifting or blowing snow
30	Slight or moderate dust-storm or sand-storm	-has decreased during the preceding hour
31		-no appreciable change during the preceding hour
32		-has begun or has increased during the preceding hour
33	Severe dust-storm or sand-storm	-has decreased during the preceding hour
34		-no appreciable change during the preceding hour
35		-has begun or has increased during the preceding hour
36	Slight or moderate blowing snow	generally low (below eye level)
37	Heavy drifting snow	
38	Slight or moderate blowing snow	generally high (above eye level)
39	Heavy blowing snow	
ww = 40 - 49		Fog or ice fog at the time of observation
40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
41	Fog or ice fog in patches	
42	Fog or ice fog, sky visible	has become thinner during the preceding hour
43	Fog or ice fog, sky invisible	
44	Fog or ice fog, sky visible	no appreciable change during the preceding hour
45	Fog or ice fog, sky invisible	
46	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
47	Fog or ice fog, sky invisible	
48	Fog, depositing rime, sky visible	
49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | |
|----|--|--|
| 50 | Drizzle, not freezing, intermittent | } slight at time of observation |
| 51 | Drizzle, not freezing, continuous | |
| 52 | Drizzle, not freezing, intermittent | } moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | |
| 54 | Drizzle, not freezing, intermittent | } heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | |
| 56 | Drizzle, freezing, slight | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | |
| 58 | Drizzle and rain, slight | |
| 59 | Drizzle and rain, moderate or heavy | |

ww = 60 - 69 Rain

- | | | |
|----|---|-----------------------------------|
| 60 | Rain, not freezing, intermittent | } slight at time of observation |
| 61 | Rain, not freezing, continuous | |
| 62 | Rain, not freezing, intermittent | } moderate at time of observation |
| 63 | Rain, not freezing, continuous | |
| 64 | Rain, not freezing, intermittent | } heavy at time of observation |
| 65 | Rain, not freezing, continuous | |
| 66 | Rain, freezing, slight | |
| 67 | Rain, freezing, moderate or heavy | |
| 68 | Rain or drizzle and snow, slight | |
| 69 | Rain or drizzle and snow, moderate or heavy | |

70 - 79 Solid precipitation not in showers

- | | | |
|----|---|-----------------------------------|
| ww | | |
| 70 | Intermittent fall of snow flakes | } slight at time of observation |
| 71 | Continuous fall of snow flakes | |
| 72 | Intermittent fall of snow flakes | } moderate at time of observation |
| 73 | Continuous fall of snow flakes | |
| 74 | Intermittent fall of snow flakes | } heavy at time of observation |
| 75 | Continuous fall of snow flakes | |
| 76 | Ice prisms (with or without fog) | |
| 77 | Snow grains (with or without fog) | |
| 78 | Isolated starlike snow crystals (with or without fog) | |
| 79 | Ice pellets, type (a) | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | |
|----|--|---|
| 80 | Rain shower(s), slight | |
| 81 | Rain shower(s), moderate or heavy | |
| 82 | Rain shower(s), violent | |
| 83 | Shower(s) of rain and snow mixed, slight | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | |
| 85 | Snow shower(s), slight | |
| 86 | Snow shower(s), moderate or heavy | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain | } - slight |
| 88 | or rain and snow mixed | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | } - moderate or heavy |
| 90 | | |
| 91 | Slight rain at time of observation | } thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | } thunderstorm at time of observation |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | |
| 99 | Thunderstorm, heavy, with hail at time of observation | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{5}{8}$ n.m.)
94	1-2 km (approx. $\frac{5}{8}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

<u>Institute:</u>	Arctic Unit, Montreal
<u>Observation platform:</u>	M.V. "Radium Gilbert"
<u>Vessel's cruising speed:</u>	8 knots
<u>*Total number of stations occupied:</u>	132
<u>Water transparency</u>	obtained using a Secchi disc.
<u>Barometer readings</u>	from Aneroid barometer, corrected prior to recording
<u>Air temperature</u>	from fixed psychrometer
<u>Wet bulb temperature</u>	from fixed psychrometer
<u>Surface Water temperature</u>	obtained from a bucket sample using a laboratory thermometer

*This includes a number of repeated stations, as listed on p.30.

The station data contained in Section III are machine-listed in chronological sequence, numbered consecutively from 1 to 132 inclusive.

Repeated stations are listed below, together with the page numbers under which they can be found:

<u>Station</u>	<u>Page Nos.</u>
1	33 - 55
3	39, 49, 62, 87, 88, 98.
4	44, 63, 67, 87, 89, 98.
11	52, 62, 68, 89, 97.
33	61, 94.
89	90, 91.
103	66, 96.

SECTION III

Serial limnological data

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 10.5	VIS
CONS. NO 001	MCNTH 6	MXSAMPD 00	WAVES 2	XX	WET B	STN 001
LAT 66-049N	DAY 22	NO.DPTH 1	WND-DIR 050	WW-CODE 02		
LON 118-020W	HR 23.9	W-COLOR	WND-FCE 02	CLD-TPE 6		
MARSD SQ 228		W-TRNSP	BARO 1009.3	CLD-AMT 1	HW	

O B S E R V E D

GMT DEPTH TEMP SAL OXYGEN SGMT SOUND PO4 -P- CPL NO3 SID PH
239 0000 0340

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 08.0	VIS
CONS. NO 002	MONTH 6	MXSAMPD 00	WAVES 2	XX	WET 8	STN 001
LAT 66-049N	DAY 23	NO.DPTH 1	WND-DIR 200	WW-CODE 02		
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 01	CLD-TPE 0		
MARSD SQ 228		W-TRNSP	BARO 1004.3	CLD-AMT 1	HW	

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SID PH
150 C000 015G

C-REF-NO 001	YR 1963	DEPTH 73	WAVES 1 2221	AIR T 15.5	VIS
CONS. NO 007	MONTH 6	MXSAMPC 01	WAVES 2 XX	WET B 09.4	STN 002
LAT 66-045N	DAY 25	NC-DPTH 10	WNC-DIR 220	WW-CODE	
LON 118-023W	HR 16.0	W-COLOR	WNC-FCE 02	CLD-TPE 2	
MARSD SQ 228		W-TRNSP 17	BARO 994.8	CLD-AMT 8	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 13.3	VIS
CONS. NO 008	MONTH 6	MXSAMPC 00	WAVES 2	XX	WET B 11.1	STN 001
LAT 66-049N	DAY 26	NO. DPTH 1	WND-DIR 270	WW-CODE 20		
CON 118-020W	HR 06.0	W-COLOR	WND-FCE 01	CLD-TPE 6		
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT 8	HW	

O B S E R V E D

GMT DEPTH T E M P S A L CXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH
060 C000 0280

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 XX	AIR T 13.9	VIS
CONS. NO 009	MONTH 6	MXSAMPD 00	WAVES 2 XX	WET B 11.6	STN 001
LAT 66-049N	DAY 26	NO.DPTH 1	WND-DIR 270	WW-CODE 40	
LON 118-020W	HR 17.0	W-COLOR	WND-FCE 01	CLD-TPE 6	
MARSD SQ 228		W-TRNSP	BARO 995.7	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
170	0000	0400								

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 XX	AIR T 11.1	VIS
CONS. NO 010	MONTH 6	MXSAMPD 00	WAVES 2 XX	WET B 08.9	STN 001
LAT 66-049N	DAY 27	NO.DPTH 1	WND-DIR 270	WW-CODE 02	
LON 118-020W	HR 04.0	W-COLOR	WND-FCE 01	CLD-TPE 7	
MARSD SQ 228		W-TRNSP	BARO 997.8	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
040	0000	0320								

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 05.6	VIS
CONS. NO 011	MONTH 6	MXSAMPD 00	WAVES 2	XX	WET B 05.0	STN 001
LAT 66-049N	DAY 27	NO.DPTH 1	WND-DIR		WW-CODE 02	
LON 118-020W	HR 15.0	W-COLOR	WND-SPD		CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO 1000.0		CLD-AMT 8	HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH

150 0000 0310

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 05.0	VIS
CONS. NO 012	MONTH 6	MXSAMPD 00	WAVES 2	XX	WET B 04.5	STN 001
LAT 66-049N	DAY 28	NO.DPTH 1	WND-DIR 200	HW-CODE 02		
LON 118-020W	HR 05.0	W-COLOR	WND-FCE 01	CLD-TPE 0		
MARSD SQ 228		W-TRNSP	BARO 1000.6	CLD-AMT 2	HW	

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SID PH
050 C000 0300

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 07.8	VIS
CONS. NO 013	MONTH 6	MXSAMPD 00	WAVES 2	XX	WET B 06.1	STN 001
LAT 66-049N	DAY 28	NO.DPTH 1	WND-DIR 290	WW-CODE 02		
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 01	CLD-TPE 3		
MARSD SQ 228		W-TRNSP	BARO 1000.3	CLD-AMT 7	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
150	0000	0350									

C-REF-NO 001	YR 1963	DEPTH 55	WAVES 1	20	AIR T 07.8	VIS
CONS. NO 014	MONTH 6	MXSAMPD 00	WAVES 2	X0	WET B 06.1	STN 003
LAT 66-045N	DAY 28	NO.DPTH 9	WND-DIR 290	WW-CODE 02		
LON 118-039W	HR 16.0	W-COLOR	WND-FCE 01	CLD-TPE 3		
MARSD SQ 228		W-TRNSP 16	BARO 1000.3	CLD-AMT 7	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
180	0000	0269					004	089	074		763
178	0003	0263					003		089		770
175	0005	0270					004	075	079		778
172	0007	0267					003		088		786
170	0010	0266					005	088	108		792
168	0015						004		079		790
165	0020	0264					005	081	099		788
162	0030	0266					003		072		789
160	0050	0272					014		117		778

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 06.7	VIS
CONS. NO 015	MONTH 6	MXSAMPC 00	WAVES 2	XX	WET B 05.6	STN 001
LAT 66-049N	DAY 29	NO.DPTH 1	WND-DIR 140	WW-CODE 02		
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 01	CLD-TPE 3		
MARSD SQ 228		W-TRNSP	BARO 1005.3	CLD-AMT 5		HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL NO3 SID PH
150 0000 0380

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 00X0	AIR T 07.7	VIS
CONS. NO 016	MONTH 6	MXSAMPD 00	WAVES 2 XX	WET B 06.1	STN 001
LAT 66-049N	DAY 30	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LON 118-020W	HR 05.0	W-COLOR	WND-FCE 00	CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO 1011.3	CLD-AMT 1	HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL N03 SIO PH
050 C000 0320

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 00X0	AIR T 14.4	VIS
CONS. NO 019	MONTH 7	MXSAMPD 00	WAVES 2 XX	WET B 10.6	STN 001
LAT 66-049N	DAY 01	NO. DPTH 1	WND-DIR CALM	WW-CODE 02	
LOH 118-020W	HR 15.0	W-COLOR	WND-FCE 00	CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO 1007.8	CLD-AMT 3	HW

OBSERVED

[illegible]

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 00X0	AIR T	VIS
CONS. NO 020	MONTH 7	MXSAMPD 00	WAVES 2 XX	WET B	STN 001
LAT 66-049N	DAY 02	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LON 118-020W	HR 03.3	W-COLOR	WND-FCE 00	CLD-TPE 3	
MARSD SQ 228		W-TRNSP	BARO 1006.3	CLD-AMT 7	HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL NO3 SIO PH
035 0000 0390

C-REF-NO 001	YR 1963	DEPTH	1	WAVES 1	XX	AIR T	10.0	VIS
CONS. NO 021	MONTH 7	MXSAMPD	00	WAVES 2	XX	WET B	08.3	STN 001
LAT 66-049N	DAY 02	NO.DPTH	1	WND-DIR	310	WW-CODE	02	
LON 118-020W	HR 15.0	W-COLOR		WND-FCE	01	CLD-TPE	3	
MARSD SQ 228		W-TRNSP		BARO		CLD-AMT	7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
150	0000	0400								

C-REF-NO 001	YR 1963	DEPTH	1	WAVES 1	XX	AIR T	18.9	VIS
CONS. NO 022	MONTH 7	MXSAMPD	00	WAVES 2	XX	WET B	12.7	STN 001
LAT 66-049N	DAY 03	NO.DPTH	1	WND-DIR	160	WW-CODE	03	
LON 118-020W	HR 04.3	W-COLOR		WND-FCE	01	CLD-TPE	7	
MARSD SQ 228		W-TRNSP		BARO	1002.3	CLD-AMT	7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
045	0000	0710								

C-REF-NO 001 YR 1963 DEPTH 1 WAVES 1 00X0 AIR T 11.2 VIS
 CONS. NO 023 MONTH 7 MXSAMPD 00 WAVES 2 XX WET B 11.1 STN 001
 LAT 66-049N DAY 03 NO.DPTH 1 WND-DIR CALM WW-CODE 43
 LON 118-020W HR 15.0 W-COLOR WND-FCE 00 CLD-TPE
 MARSD SQ 228 W-TRNSP BARO CLD-AMT HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH
 150 0000 0530

C-REF-NO 001 YR 1963 DEPTH 10 WAVES 1 00X0 AIR T 12.2 VIS
 CONS. NO 024 MONTH 7 MXSAMPD 00 WAVES 2 XX WET B 11.1 STN 004
 LAT 66-040N DAY 03 NO.DPTH 6 WND-DIR CALM WW-CODE 01
 LON 117-523W HR 17.0 W-COLOR WND-FCE 00 CLD-TPE 0
 MARSD SQ 228 W-TRNSP 08 BARO CLD-AMT 1 HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH
 181 0000 1245
 180 0003 0957 005 084 073 810
 180 0004 0821 005 112 096 780
 171 0005 0731
 170 0007 0684 001 187 096 798
 170 0010 0575 002 336 095 798
 006 280 103 768

C-REF-NO 001	YR 1963	DEPTH 16	WAVES 1 00X0	AIR T 12.2	VIS
CONS. NO 025	MONTH 7	MXSAMPC 00	WAVES 2 XX	WET B 11.1	STN 006
LAT 66-033N	DAY 03	NO.DPTH 6	WNC-DIR CALM	WW-CODE 02	
LON 117-530W	HR 19.0	W-COLOR	WND-FCE 00	CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	TEMP	SAL	OXYGEN	SGMT	SOUND	P04 -P-	CPL	N03	SID	PH
210	0000	0761					000		128		810
201	0003	0762					001		114		802
200	0005	0746					000		127		801
200	0007	0743					000		105		801
191	0010	0664					001		113		798
190	0015	0536					003		113		801

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 17.2	VIS
CONS. NO 026	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 12.2	STN 001
LAT 66-049N	DAY 04	NO.DPTH 1	WNC-DIR 180	WW-CODE 02		
LOX 118-020W	HR 17.0	W-COLOR	WND-FCE 01	CLD-TPE 8		
MARSD SQ 228		W-TRNSP	BARO 1009.3	CLD-AMT 4		HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL N03 SIO PH
170 0000 0650

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 07.8	VIS
CONS. NO 029	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 07.2	STN 001
LAT 66-049N	DAY 06	NO.DPTH 1	WND-DIR 110	WW-CODE 43		
LCN 118-020W	HR 15.0	W-COLOR	WND-FCE 03	CLD-TPE		
MARSD SQ 228		W-TRNSP	BARO 1008.3	CLD-AMT		HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL NO3	SIO	PH
150	0000	0450								

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 12.8	VIS
CONS. NO 030	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 08.9	STN 001
LAT 66-049N	DAY 07	NO.DPTH 1	WNO-DIR 040	WW-CODE 01		
LON 118-020W	HR 19.0	W-COLOR	WNC-FCE 02	CLD-TPE 8		
MARSD SQ 228		W-TRNSP	BARO 1019.8	CLD-AMT 1	HW	

O B S E R V E D

```

GMT  DEPTH  T E M P  S A L  CXYGEN  SGMT  SOUND  PO4 -P- CPL NO3 SID  PH
190  C000    0550

```

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 15.0	VIS
CONS. NO 031	MONTH 7	MXSAMPD 00	WAVES 2	XX	WET B 08.9	STN 001
LAT 66-049N	DAY 08	NO.DPTH 1	WND-DIR 050	WW-CODE 02		
LON 118-020W	HR 03.0	W-COLOR	WND-FCE 01	CLD-TPE 8		
MARSD SQ 228		W-TRNSP	BARO 1022.3	CLD-AMT 1	HW	

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL NO3 SIO PH

030 0000 0630

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 13.4	VIS
CONS. NO 032	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 10.0	STN 001
LAT 66-049N	DAY 08	NO.DPTH 1	WND-DIR 180	WW-CODE 02		
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 01	CLD-TPE 0		
MARSD SQ 228		W-TRNSP	BARO 1017.8	CLD-AMT 1	HW	

O B S E R V E D

```

GMT  DEPTH  T E M P  S A L  OXYGEN  SGMT  SOUND  PO4 -P- CPL NO3 SIO  PH
150  0000      0480

```

C-REF-NO 001	YR 1963	DEPTH	57	WAVES 1	XX	AIR T	16.2	VIS
CONS. NO 033	MONTH 7	MXSAMPC	01	WAVES 2	2721	WET B	11.0	STN 003
LAT 66-045N	DAY 09	NO.DPTH	9	WND-DIR	040	WW-CODE	01	
LON 118-039W	HR 04.3	W-COLOR		WND-FCE	01	CLD-TPE	8	
MARSD SQ 228		W-TRNSP	20	BARO	1013.3	CLD-AMT	1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04	-P-	CPL	N03	SIO	PH
043	0000	0339					005		096	059		792
043	0003	0339					017			086		796
043	0005	0339					009		070	054		794
043	0007	0338					007			056		796
043	0010	0339					005		084	057		784
043	0015	0342					007			057		792
043	0020	0355					008		096	058		784
043	0030	0375					007			065		793
043	0055	0390					003		070	056		789

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 00X0	AIR T 12.8	VIS
CONS. NO 034	MONTH 7	MXSAMPD 00	WAVES 2 XX	WET B 10.0	STN C01
LAT 66-049N	DAY 09	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LOX 118-020W	HR 15.0	W-COLOR	WND-FCE 00	CLD-TPE 3	
MARSD SQ 228		W-TRNSP	BARO 1014.0	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3 SIO	PH
150	CCCC	0780							

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 21.1	VIS
CONS. NO 035	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 12.7	STN 001
LAT 66-049N	DAY 10	NO.DPTH 1	WND-DIR 040	WW-CCDE 02		
LON 118-020W	HR 03.0	W-COLOR	WND-FCE 02	CLD-TPE 0		
MARSD SQ 228		W-TRNSP	BARO 1013.3	CLD-AMT 1	HW	

O B S E R V E D

```

GMT  DEPTH  T E M P  S A L  OXYGEN  SGMT  SOUND  PO4 -P- CPL NO3 SIO  PH
030  0000    C600

```

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 18.9	VIS
CONS. NO 036	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 12.7	STN 001
LAT 66-049N	DAY 10	NO.DPTH 1	WND-DIR 040		WW-CODE 01	
LON 118-020W	HR 16.5	W-COLOR	WND-FCE 01		CLD-TPE 0	
MARSC SQ 228		W-TRANSP	BARO 1013.8		CLD-AMT 5	HW

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH
161 0000 0730

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 18.3	VIS
CONS. NO 037	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 12.8	STN 001
LAT 66-049N	DAY 12	NO.DPTH 1	WND-DIR 270	WW-CODE 03		
LON 118-020W	HR 17.0	W-COLOR	WND-FCE 01	CLD-TPE 0		
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT 5	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL NO3	SIO	PH
170	0000	0950								

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 XX	AIR T 17.2	VIS
CONS. NO 038	MONTH 7	MXSAMPD 00	WAVES 2 XX	WET B 13.3	STN 001
LAT 66-049N	DAY 13	NO.DPTH 1	WNC-DIR 180	WW-CODE 03	
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 01	CLD-TPE 7	
MARSD SQ 228		W-TRNSP	BARO 1002.3	CLD-AMT 8	HW

O B S E R V E D

GMT DEPTH TEMP SAL OXYGEN SGMT SOUND PO4 -P- CPL NO3 SID PH
150 0000 0900

C-REF-NO 001	YR 1963	DEPTH	46	WAVES 1	XX	AIR T	17.2	VIS
CONS. NO 039	MONTH 7	MXSAMPC	00	WAVES 2	XX	WET B	13.3	STN 011
LAT 66-025N	DAY 14	NO.DPTH	9	WND-DIR	180	WW-CODE	02	
LON 117-590W	HR 00.1	W-COLOR		WND-FCE	01	CLD-TPE	7	
MARSC SQ 228		W-TRNSP		BARO	1002.3	CLD-AMT	8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04	-P-	CPL	NO3	SIO	PH
024	0000	1348					001		048	090		802
020	0003	0620					001			107		801
018	0005	0547					001		113	084		800
015	0007	0497					000			071		792
013	0010	0455					000		063	086		792
010	0015	0425					000			061		802
008	0020	0418					000		056	330		810
005	0030	0398					001		048	240		802
001	0046	0393					000			064		820

C-REF-NO 001	YR 1963	DEPTH	1	WAVES 1	31X0	AIR T	06.1	VIS	
CONS. NO 040	MONTH 7	MXSAMPD	00	WAVES 2	XX	WET B	05.5	STN	001
LAT 66-049N	DAY 14	NO.DPTH	1	WND-DIR	290	WW-CODE	03		
LON 118-020W	HR 15.0	W-COLOR		WND-FCE	03	CLD-TPE	7		
MARSD SQ 228		W-TRNSP		BARO	1002.8	CLD-AMT	8	HW	

O B S E R V E D

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND PO4 -P- CPL NO3 SIO PH
150 0000 0950

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 08.8	VIS
CONS. NO 041	MONTH 7	MXSAMPD 00	WAVES 2	XX	WET B 06.5	STN C01
LAT 66-049N	DAY 15	NO.DPTH 1	WND-DIR 270	WW-CODE 02		
LOX 118-020W	HR 18.0	W-COLOR	WND-FCE 02	CLD-TPE 3		
MARSD SQ 228		W-TRNSP	BARO 1007.8	CLD-AMT 4	HW	

OBSERVED

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
180	0000	0750								

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1 00X0	AIR T 09.4	VIS
CONS. NO 042	MONTH 7	MXSAMPD 00	WAVES 2 XX	WET B 07.2	STN 001
LAT 66-049N	DAY 16	NO.DPTH 1	WND-DIR CALM	WW-CODE 02	
LON 118-020W	HR 05.3	W-COLOR	WND-FCE 00	CLD-TPE 4	
MARSD SQ 228		W-TRNSP	BARO 1004.8	CLD-AMT 3	HW

O B S E R V E D

```

GMT  DEPTH  T E M P  S A L  OXYGEN  SGMT  SOUND  P04 -P- CPL NO3 SID  PH
053  C000      0790

```

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 09.5	VIS
CONS. NO 043	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 07.2	STN 001
LAT 66-049N	DAY 16	NO. DPTH 1	WND-DIR 220	WW-CODE 02		
LON 118-020W	HR 15.0	W-COLOR	WND-FCE 02	CLD-TPE 8		
MARSD SQ 228		W-TRNSP	BARO 1002.8	CLD-AMT 1	HW	

OBSERVED

GMT DEPTH T E M P S A L OXYGEN SGMT SOUND P04 -P- CPL N03 SIO PH
150 C000 0840

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 09.5	VIS
CONS. NO 044	MONTH 7	MXSAMPE 00	WAVES 2	XX	WET B 07.8	STN 001
LAT 66-049N	DAY 17	NO.DPTH 1	WND-DIR 270	WW-CODE		
LON 118-020W	HR 02.5	W-COLOR	WND-FCE 01	CLD-TPE		
MARSD SQ 228		W-TRNSP	BARO 1003.3	CLD-AMT		HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T 09.5	VIS
CONS. NO 045	MONTH 7	MXSAMPD 00	WAVES 2	XX	WET B 07.2	STN 001
LAT 66-049N	DAY 17	NO.DPTH 1	WND-DIR 340		WW-CODE 02	
LON 118-020W	HR 16.0	W-COLOR	WND-FCE 02		CLD-TPE 7	
MARSD SQ 228		W-TRNSP	BARO 999.3		CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
160	0000	0800								

C-REF-NO 001	YR 1963	DEPTH 191	WAVES 1 0221	AIR T 14.4	VIS
CONS. NO 046	MONTH 7	MXSAMPD 02	WAVES 2 X0	WET B 11.6	STN 012
LAT 65-416N	DAY 19	NO.DPTH 7	WND-DIR 020	WW-CODE	
LON 118-195W	HR 15.3	W-COLOR	WND-FCE 03	CLD-TPE 7	
MARSD SQ 228		W-TRNSP	BARO 999.3	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
183	0000	1315	00034		0055	14597	014	048	020	803
180	0003	1305					TRC	112		808
175	0005	1304					TRC	112		800
170	0010	1215					TRC	112		806
165	0020	0566					TRC	112		793
160	0030	0516					TRC			
153	0190	0491					TRC			

C-REF-NO	001	YR	1963	DEPTH	45	WAVES	1	XX	AIR T	14.4	VIS	
CONS. NO	049	MONTH	7	MXSAMPC	00	WAVES	2	XX	WET B	10.5	STN	017
LAT	65-465N	DAY	21	NO.DPTH	7	WND-DIR	040		WW-CODE	01		
LON	118-045W	HR	00.1	W-COLOR		WND-FCE	01		CLD-TPE	7		
MARSD	SQ 228			W-TRNSP		BARO			CLD-AMT	8	HW	

O B S E R V E D

[illegible]

C-REF-NO	001	YR	1963	DEPTH	27	WAVES	1	XX	AIR T	13.9	VIS	
CONS. NO	050	MONTH	7	MXSAMPC	00	WAVES	2	XX	WET B	10.6	STN	021
LAT	65-396N	DAY	21	NO.DPTH	6	WND-DIR	340		KW-CODE	02		
LOC	118-073W	HR	15.5	W-COLOR		WND-FCE	03		CLD-TPE	7		
MARSD	SQ 228			W-TRNSP		BARO	1009.8		CLD-AMT	8	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
168	0000	1488							126			
165	0003	1443										
163	0005	1253							098			
150	0010	1014							098			
158	0015	0692							075			
155	0026	0484							054			

C-REF-NO 001	YR 1963	DEPTH 17	WAVES 1	XX	AIR T 13.9	VIS
CONS. NO 051	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 10.6	STN 022
LAT 65-381N	DAY 21	NO.DPTH 2	WND-DIR 340	WW-CGDE 02		
LON 118-070W	HR 20.5	W-COLOR	WND-FCE 02	CLD-TPE 7		
MARSD SQ 228		W-TRNSP	BARO 1009.8	CLD-AMT 8	HW	

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 5	WAVES 1	XX	AIR T 13.9	VIS
CONS. NO 052	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 10.6	STN 023
LAT 65-362N	DAY 21	NO.DPTH 1	WND-DIR 340	WW-CODE 02		
LON 117-590W	HR 22.5	W-COLOR	WND-FCE 02	CLD-TPE 7		
MARSD SQ 228		W-TRNSP	BARO 1009.8	CLD-AMT 8	HW	

O B S E R V E D

```
GMT   DEPTH  T E M P    S A L   OXYGEN  SGMT   SOUND   PO4 -P- CPL NO3 SIO   PH
225   0000      1493
```

C-REF-NO 001	YR 1963	DEPTH 38	WAVES 1	XX	AIR T 15.6	VIS
CONS. NO 053	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B 12.2	STN 027
LAT 65-496N	DAY 23	NO.DPTH 2	WND-DIR 020	WW-CODE 01		
LON 119-161W	HR 18.0	W-COLOR	WND-FCE 02	CLD-TPE 7		
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT 4	HW	

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 59	WAVES 1 XX	AIR T	VIS
CONS. NO 054	MONTH 7	MXSAMPC 00	WAVES 2 XX	WET B	STN 028
LAT 65-475N	DAY 23	NO.DPTH 3	WND-DIR	WW-CODE 01	
LON 120-125W	HR 23.0	W-COLOR	WND-SPD	CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO 1001.8	CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 73	WAVES 1 00X0	AIR T 06.1	VIS
CONS. NO 055	MONTH 7	MXSAMPC 01	WAVES 2 XX	WET B 05.5	STN 029
LAT 65-290N	DAY 24	NO.DPTH 5	WND-DIR CALM	WW-CCDE 02	
LON 121-310W	HR 05.5	W-COLOR	WND-FCE 00	CLD-TPE 1	
MARSD SQ 229		W-TRNSP	BARO 1001.8	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
055	0000	0500								
055	0020	0450								
055	0025	0480								
055	0040	0460								
055	0055	0450								

C-REF-NO 001	YR 1963	DEPTH 38	WAVES 1	XX	AIR T	VIS
CONS. NO 056	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B	STN 031
LAT 65-099N	DAY 25	NO.DPTH 5	WND-DIR		WW-CODE 02	
LON 123-165W	HR 05.8	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001 YR 1963 DEPTH 192 WAVES 1 XX AIR T 09.5 VIS
 CONS. NO 057 MONTH 7 MXSAMPD 02 WAVES 2 XX WET B STN 032
 LAT 66-050N DAY 26 NO.DPTH 6 WND-DIR WW-CODE 02
 LON 118-450W HR 01.3 W-COLOR WND-SPD CLD-TPE 3
 MARSD SQ 228 W-TRNSP 30 BARO 1008.3 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL	NO3	SIO	PH
013	0000	0362									
013	0025	0340									
013	0050	0350									
013	0075	0360									
013	0100	0370									
013	0192	0360									

C-REF-NO 001 YR 1963 DEPTH 427 WAVES 1 00X0 AIR T 09.5 VIS
 CONS. NO 058 MONTH 7 MXSAMPD 04 WAVES 2 XX WET B STN 033
 LAT 66-042N DAY 26 NO.DPTH 10 WND-DIR CALM WW-CCDE 02
 LON 118-100W HR 20.0 W-COLOR WND-FCE 00 CLD-TPE 3
 MARSD SQ 228 W-TRNSP BARO 1008.3 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL	NO3	SIO	PH
200	0000	0378						007	102		
200	0003	0378							117		
200	0005	0378						007	112		
200	0010	0375						007	123		
200	0020	0371						014	101		
200	0030	0371						014			
200	0190	0364					000		126		788
200	0300	0361					000		102		768
200	0400	0348					000		100		780
200	0420						005		110		780

C-REF-NO 001	YR 1963	DEPTH	56	WAVES 1	XX	AIR T	VIS
CONS. NO 059	MONTH 7	MXSAMPD	00	WAVES 2	XX	WET B	STN 011
LAT 66-029N	DAY 29	NO.DPTH	9	WNC-DIR		WW-CCDE	
LON 117-590W	HR 17.0	W-COLOR		WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP		BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
195	0000	0701	CC038		C000	14350		056			
192	0003	0679									
188	0005	0643									
185	0007	0701									
182	0010	0582									
179	0015	0618									
176	0020	0619									
173	0030	0528									
170	0050	0435									

C-REF-NO 001	YR 1963	DEPTH	30	WAVES 1	XX	AIR T	VIS
CONS. NO 060	MONTH 7	MXSAMPD	00	WAVES 2	XX	WET B	STN 003
LAT 66-043N	DAY 29	NO.DPTH	6	WNC-DIR		WW-CODE	
LON 118-039W	HR 21.0	W-COLOR		WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP		BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
237	0000	0602	CC038		C004	14307		003	112	031	
233	0005	0512						011	123		
228	0010	0511						042	094		
223	0015	0509						056	110		
216	0020	0489						040	103		
210	0030	0457						028	080		

C-REF-NO 001	YR 1963	DEPTH 15	WAVES 1	XX	AIR T	VIS
CONS. NO 061	MONTH 7	MXSAMPC 00	WAVES 2	XX	WET B	STN 004
LAT 66-040N	DAY 29	NO.DPTH 6	WND-DIR		WW-CCDE	
LON 117-523W	HR 21.0	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
226	0000	1069						014			
224	0003	1069									
220	0005	1059						018			
216	0007	1039						025			
213	0010	0829						031			
210	0015	0566						081			

C-REF-NO 001	YR 1963	DEPTH 35	WAVES 1	XX	AIR T	VIS
CONS. NO 062	MONTH 7	MXSAMPD 00	WAVES 2	XX	WET B	STN 034
LAT 66-360N	DAY 30	NO.DPTH 9	WND-DIR		WW-CCDE	
LON 117-506W	HR 22.9	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 44	WAVES 1	XX	AIR T 08.6	VIS
CONS. NO 063	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B 05.5	STN 039
LAT 66-368N	DAY 01	NO-DPTH 5	WND-DIR 180	WW-CODE 02		
LON 117-369W	HR 19.5	W-COLOR	WND-FCE 01	CLD-TPE 6		
MARSD SQ 228		W-TRNSP	BARO 1010.8	CLD-AMT 7	HW	

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 30	WAVES 1 00X0	AIR T 08.0	VIS
CONS. NO 064	MONTH 8	MXSAMPD 00	WAVES 2 2721	WET B 07.2	STN 044
LAT 66-202N	DAY 03	NO.DPTH 6	WND-DIR CALM	WW-CODE 02	
LON 118-227W	HR 20.3	W-COLOR	WND-FCE 00	CLD-TPE 7	
MARSD SQ 228		W-TRNSP	BARO 1001.8	CLD-AMT 8	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 15	WAVES 1	XX	AIR T	VIS
CONS. NO 065	MONTH 8	MXSAMPC 00	WAVES 2	XX	WET B	STN 045
LAT 66-193N	DAY 04	NO.DPTH 3	WND-DIR		WW-CGDE	
LON 120-00W	HR 01.5	W-COLOR	WNO-SPD		CLO-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLO-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
015	0000	0644								
015	0005	0610								
015	0010	0550								

C-REF-NO 001	YR 1963	DEPTH 114	WAVES 1	XX	AIR T	VIS
CONS. NO 066	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 046
LAT 66-077N	DAY 04	NO.DPTH 10	WNC-DIR		WW-CODE	
LCN 120-406W	HR 05.0	W-COLOR	WND-SPD		CLO-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLO-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 2	WAVES 1 3121	AIR T 13.5	VIS
CONS. NO 067	MONTH 8	MXSAMPC 00	WAVES 2 XX	WET B 09.4	STN 103
LAT 65-080N	DAY 04	NO.DPTH 1	WND-DIR 310	WW-CODE 02	
LON 124-30W	HR 20.3	W-COLOR	WND-FCE 03	CLD-TPE 6	
MARSD SQ 229		W-TRNSP	BARO 1001.8	CLD-AMT 7	HW

O B S E R V E D

GMT DEPTH TEMP SAL OXYGEN SGMT SOUND P04 -P- CPL NC3 SIO PH

203 0000 0650

C-REF-NO 001	YR 1963	DEPTH 200	WAVES 1 2721	AIR T 09.4	VIS
CONS. NO 068	MONTH 8	MXSAMPC 02	WAVES 2 XX	WET B 06.1	STN 047
LAT 66-109N	DAY 07	NO.DPTH 9	WNC-DIR 220	WW-CODE 15	
LON 118-360W	HR 01.0	W-COLOR	WND-FCE 03	CLD-TPE 3	
MARSD SQ 228		W-TRNSP	BARO 1014.3	CLD-AMT 6	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 13	WAVES 1	XX	AIR T	VIS
CONS. NO 069	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B	STN 004
LAT 66-040N	DAY 07	NO.DPTH 4	WND-DIR		WW-CCDE	
LON 117-523W	HR 21.0	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP 08	BARO 1014.3		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
224	0000	1239							048	
219	0005	1000							112	
215	0010	0717							587	
210	0013	0637							280	

C-REF-NO 001	YR 1963	DEPTH 15	WAVES 1 3620	AIR T 16.7	VIS
CONS. NO 070	MONTH 8	MXSAMPD 00	WAVES 2 XX	WET B 12.7	STN 048
LAT 65-597N	DAY 07	NO.DPTH 5	WND-DIR 360	WW-CCDE 02	
LON 117-441W	HR 23.2	W-COLOR	WND-FCE 01	CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO 1014.3	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
235	0000	1271								
235	0005	1130								
235	0007	0850								
235	0010	0750								
235	0015	0650								

C-REF-NO 001	YR 1963	DEPTH 64	WAVES 1	XX	AIR T	VIS
CONS. NO 071	MONTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 049
LAT 66-016N	DAY 08	NO.DPTH 10	WNC-DIR		WW-CODE 02	
LON 117-492W	HR 02.0	W-COLOR	WND-SPC		CLD-TPE 0	
MARSD SQ 228		W-TRNSP	BARO 1014.3		CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	P04 -P-	CPL NC3	SIO	PH
020	0000	1080								
020	0005	1070								
020	0010	0920								
020	0015	0850								
020	0020	0760								
020	0025	0750								
020	0030	0740								
020	0035	0730								
020	0050	0680								
020	0064	0660								

C-REF-NO 001	YR 1963	DEPTH	115	WAVES 1	XX	AIR T		VIS
CONS. NO 072	MONTH 8	MXSAMPC	01	WAVES 2	XX	WET B		STN 011
LAT 66-029N	DAY 08	NO.DPTH	9	WNC-DIR		WW-CODE	02	
LON 117-590W	HR 03.0	W-COLOR		WND-SPC		CLD-TPE	0	
MARSD SQ 228		W-TRANSP	08	BARO		CLD-AMT	8	HW

O B S E R V E D

[illegible]

C-REF-NO	001	YR	1963	DEPTH	190	WAVES 1	2720	AIR T	08.9	VIS	
CONS. NO	073	MONTH	8	MXSAMPD	02	WAVES 2	XX	WET B	08.3	STN	050
LAT	66-142N	DAY	08	NO.DPTH	11	WND-DIR	CALM	WW-CCDE	02		
LON	118-020W	HR	19.5	W-COLOR		WND-FCE	00	CLD-TPE	6		
MARSD	SQ 228			W-TRNSP		BARO	1012.3	CLD-AMT	8	HW	

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 164	WAVES 1 04X1	AIR T 10.0	VIS
CONS. NO 074	MONTH 8	MXSAMPD 01	WAVES 2 XX	WET B 08.3	STN 051
LAT 66-138N	DAY 10	NO.DPTH 9	WND-DIR 040	W-W-CODE 02	
LON 119-110W	HR 22.5	W-COLOR	WND-FCE 02	CLD-TPE 4	
MARSD SQ 228		W-TRNSP	BARO 1016.4	CLD-AMT 7	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH	6	WAVES 1	XX	AIR T	VIS
CONS. NO 075	MONTH 8	MXSAMPC	00	WAVES 2	XX	WET B	STN 052
LAT 66-209N	DAY 11	NO.DPTH	3	WND-DIR	130	WW-CODE	
LON 119-456W	HR 15.5	W-COLOR		WND-FCE	02	CLD-TPE	4
MARSC SQ 228		W-TRNSP		BARO		CLD-AMT	7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
155	0000	1109						112			815
159	0003	1117						112			813
162	0005	1093						116			813

C-REF-NO 001	YR 1963	DEPTH 1	WAVES 1	XX	AIR T	VIS
CONS. NO 076	MONTH 8	MXSAMPC 00	WAVES 2	XX	WET B	STN 053
LAT 66-202N	DAY 11	NO.DPTH 1	WNC-DIR 130	WW-CODE 01		
LON 119-355W	HR 22.0	W-COLOR	WND-FCE 02	CLD-TPE 4		
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT 7	HW	

O B S E R V E D

```
GMT   DEPTH    TEMP     SAL      OXYGEN    SGMGT    SOUND    PO4 -P- CPL NO3 SID PH
220   0000       1317
```


C-REF-NO 001	YR 1963	DEPTH 150	WAVES 1	XX	AIR T	VIS
CONS. NO 077	MCNTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 054
LAT 66-121N	DAY 12	NO.DPTH 9	WND-DIR		WW-CGDE	
LOX 119-506W	HR 15.1	W-COLOR	WNC-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

OBSERVED

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	P04 -P-	CPL NO3	SIO	PH
151	0000	0630								
151	0005	0610								
151	0010	0580								
151	0020	0510								
151	0025	0490								
151	0050	0475								
151	0075	0480								
151	0100	0490								
151	0150	0490								

C-REF-NO 001	YR 1963	DEPTH 150	WAVES 1 00X0	AIR T	VIS
CONS. NO 078	MONTH 8	MXSAMPD 01	WAVES 2 XX	WET B	STN 055
LAT 66-060N	DAY 12	NO.DPTH 9	WND-DIR CALM	WW-CODE 02	
LOX 119-494W	HR 16.0	W-COLOR	WND-FCE 00	CLD-TPE 4	
MARSD SQ 228		W-TRNSP 20	BARO 1025.3	CLD-AMT 3	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 62	WAVES 1	XX	AIR T	VIS
CONS. NO 083	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 060
LAT 65-472N	DAY 12	NO.DPTH 8	WND-DIR		WW-CCDE	
LON 120-152W	HR 22.0	W-COLOR	WND-SPD		CLD-TPE	
MARSC SQ 229		W-TRNSP 16	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 73	WAVES 1	XX	AIR T	VIS
CONS. NO 084	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 061
LAT 65-437N	DAY 12	NO.DPTH 8	WNC-DIR		WW-CODE 02	
LGN 120-271W	HR 23.0	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP 17	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 99	WAVES 1	XX	AIR T	VIS
CONS. NO 085	MONTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 062
LAT 65-4CON	DAY 13	NO.DPTH 8	WND-DIR		WW-CODE	
LON 120-410W	HR 00.1	W-COLOR	WND-SPD		CLO-TPE	
MARSC SQ 229		W-TRNSP 17	BARO		CLO-AMT	HW

OBSERVED

[illegible]

C-REF-NO	001	YR	1963	DEPTH	55	WAVES 1	XX	AIR T	VIS
CONS. NO	086	MONTH	8	MXSAMPC	01	WAVES 2	XX	WET B	STN C63
LAT	65-363N	DAY	13	NC.DPTH	8	WND-DIR		WW-CODE	
LON	120-530W	HR	01.0	W-COLOR		WND-SPD		CLD-TPE	
MARSD SQ	229			W-TRNSP	16	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 60	WAVES 1 0421	AIR T 10.6	VIS
CONS. NO 089	MONTH 8	MXSAMPD 01	WAVES 2 XX	WET B 10.0	STN 067
LAT 65-343N	DAY 13	NO.DPTH 12	WND-DIR 040	W-W-CCDE 02	
LON 121-490W	HR 19.5	W-COLOR	WND-FCE 01	CLD-TPE 4	
MARSD SQ 229		W-TRNSP 16	BARO 1012.3	CLD-AMT 7	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH	100	WAVES 1	XX	AIR T	VIS
CONS. NO 090	MONTH 8	MXSAMPC	01	WAVES 2	XX	WET B	STN 068
LAT 65-405N	DAY 13	NO.DPTH	12	WND-DIR		WW-CODE	
LON 121-532W	HR 20.5	W-COLOR		WND-SPD		CLO-TPE	
MARSD SQ 229		W-TRNSP		BARO		CLO-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 100	WAVES 1	XX	AIR T	VIS
CONS. NO 091	MONTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 069
LAT 65-464N	DAY 13	NO.DPTH 6	WND-DIR		WW-CODE	
LON 121-542W	HR 21.5	W-COLOR	WND-SPD		CLD-TPE	
MARSC SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 120	WAVES 1	XX	AIR T	VIS
CONS. NO 092	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 070
LAT 65-532N	DAY 13	NO.DPTH 10	WND-DIR		HW-CODE	
LOX 121-583W	HR 22.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP 15	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 62	WAVES 1	XX	AIR T	VIS
CONS. NO 093	MONTH 8	MXSAMPC 00	WAVES 2	XX	WET B	STN 071
LAT 65-555N	DAY 13	NO.DPTH 9	WNC-DIR		WW-CODE	
LON 122-121W	HR 23.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 40	WAVES 1	XX	AIR T	VIS
CONS. NO 094	MONTH 8	MXSAMPC 00	WAVES 2	XX	WET B	STN 072
LAT 65-573N	DAY 14	NO.DPTH 6	WNC-DIR		WW-CCDE	
LON 122-275W	HR 01.0	W-COLOR	WNO-SPD		CLD-TPE	
MARSC SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 21	WAVES 1	XX	AIR T	VIS
CONS. NO 095	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B	STN 073
LAT 65-581N	DAY 14	NO.DPTH 2	WND-DIR		WW-CODE	
LON 122-345W	HR 15.0	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL	N03	SIO	PH
150	0000	0866									
152	0003	0823									

C-REF-NO 001	YR 1963	DEPTH 25	WAVES 1	XX	AIR T 10.5	VIS
CONS. NO 096	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B 08.9	STN 074
LAT 65-575N	DAY 14	NO.DPTH 6	WND-DIR		WW-CODE	
LON 122-190W	HR 21.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO 1014.3		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL	N03	SIO	PH
215	0000	0782									
215	0005	0720					005	019	041		845
215	0010	0700						056	129		904
215	0015	0650					013	037	041		877
215	0020	0620					008	056	077		839
215	0025	0620					013	094	086		876

C-REF-NO 001	YR 1963	DEPTH 55	WAVES 1	XX	AIR T	VIS
CONS. NO 097	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B	STN 075
LAT 65-536N	DAY 15	NO.DPTH 5	WND-DIR		WW-CODE	
LON 121-105W	HR 13.5	W-COLOR	WND-SPD		CLO-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLO-AMT	HW

OBSERVED

[illegible]

C-REF-NO 001	YR 1963	DEPTH	80	WAVES 1	XX	AIR T	VIS
CONS. NO 098	MONTH 8	MXSAMPD	01	WAVES 2	XX	WET B	STN 076
LAT 65-540N	DAY 15	NO.DPTH	8	WND-DIR		WW-CODE	
LON 120-532W	HR 14.5	W-COLOR		WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP		BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 88	WAVES 1	XX	AIR T	VIS
CONS. NO 099	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 077
LAT 65-542N	DAY 15	NO.DPTH 8	WND-DIR		WW-CCDE	
LON 120-377W	HR 15.5	W-COLOR	WND-SPD		CLD-TPE	
MARSC SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
155	0000	0520								
155	0005	0440								
155	0010	0430								
155	0015	0400								
155	0020	0390								
155	0025	0390								
155	0050	0390								
155	0075	0380								

C-REF-NO 001	YR 1963	DEPTH 95	WAVES 1	XX	AIR T	VIS
CONS. NO 100	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 078
LAT 65-546N	DAY 15	NO.DPTH 10	WND-DIR		WW-CODE	
LON 120-210W	HR 16.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL NO3	SIO	PH
165	0000	0470								
165	0005	0420								
165	0010	0410								
165	0015	0390								
165	0020	0380								
165	0025	0380								
165	0030	0370								
165	0050	0370								
165	0075	0380								
165	0085	0380								

C-REF-NO 001	YR 1963	DEPTH 67	WAVES 1 2021	AIR T 09.4	VIS
CONS. NO 103	MONTH 8	MXSAMPC 01	WAVES 2 XX	WET B 08.3	STN 081
LAT 65-553N	DAY 15	NO.DPTH 8	WND-DIR 200	WW-CODE 02	
LON 119-310W	HR 19.5	W-COLOR	WND-FCE 02	CLD-TPE 8	
MARSD SQ 228		W-TRNSP	BARO 1012.3	CLD-AMT 1	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 100	WAVES 1	XX	AIR T	VIS
CONS. NO 104	MONTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 082
LAT 65-554N	DAY 15	NO.DPTH 9	WND-DIR		WW-CCDE	
LOX 119-150W	HR 20.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 117	WAVES 1	XX	AIR T	VIS
CONS. NO 105	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 083
LAT 65-556N	DAY 15	NO.DPTH 10	WND-DIR		WW-CODE	
LON 118-587W	HR 21.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	P04 -P-	CPL N03	SIO	PH
215	0000	0650								
215	0005	0530								
215	0010	0470								
215	0015	0450								
215	0020	0430								
215	0025	0400								
215	0030	0400								
215	0050	0390								
215	0075	0390								
215	0090	0390								

C-REF-NO	001	YR	1963	DEPTH	66	WAVES	1	XX	AIR T	VIS
CONS. NO	106	MONTH	8	MXSAMPD	01	WAVES	2	XX	WET B	STN 084
LAT	65-558N	DAY	15	NO.DPTH	9	WND-DIR			WW-CODE	
LON	118-420W	HR	22.5	W-COLOR		WND-SPD			CLD-TPE	
MARSD	SQ 228			W-TRNSP		BARO			CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 132	WAVES 1	XX	AIR T	VIS
CONS. NO 107	MONTH 8	MXSAMPC 01	WAVES 2	XX	WET B	STN 085
LAT 65-574N	DAY 15	NO.DPTH 9	WND-DIR		HW-CODE	
LON 118-260W	HR 23.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 165	WAVES 1	XX	AIR T	VIS
CONS. NO 108	MONTH 8	MXSAMPD 01	WAVES 2	XX	WET B	STN 086
LAT 66-019N	DAY 16	NO.DPTH 8	WND-DIR		WW-CODE	
LON 118-121W	HR 00.5	W-COLOR	WND-SPD		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO		CLD-AMT	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 14	WAVES 1	XX	AIR T	VIS
CONS. NO 109	MONTH 8	MXSAMPD 00	WAVES 2	XX	WET B	STN 004
LAT 66-040N	DAY 17	NO.DPTH 4	WND-DIR		WW-CODE 02	
LOX 117-523W	HR 17.0	W-COLOR	WND-SPD		CLD-TPE 8	
MARSC SQ 228		W-TRNSP	BARO		CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
182	0000	1324					010		040	055		809
178	0005	1120					024		089	052		803
174	0010	0710					011		867	049		801
170	0014	0612					015		140	062		750

C-REF-NO 001	YR 1963	DEPTH 60	WAVES 1 XX	AIR T	VIS
CONS. NO 110	MONTH 8	MXSAMPC 00	WAVES 2 XX	WET B	STN 003
LAT 66-043N	DAY 17	NO.DPTH 6	WND-DIR 040	KW-CODE	
LON 118-039W	HR 21.0	W-COLOR	WND-FCE 03	CLD-TPE	8
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT	7 HW

O B S E R V E D

[illegible]

C-REF-NO	001	YR	1963	DEPTH	14	WAVES	1	X0	AIR T	10.0	VIS	
CONS. NO	113	MONTH	8	MXSAMPC	00	WAVES	2	XX	WET B	08.3	STN	004
LAT	66-040N	DAY	22	NO.DPTH	5	WND-DIR	360		WW-CCDE	02		
LON	117-523W	HR	17.0	W-COLOR		WND-FCE	02		CLD-TPE	6		
MARSD	SQ 228			W-TRNSP		BARO	1017.3		CLD-AMT	7	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
184	0000	1098						077			
180	0003	1009									
176	0005	0995						154			
173	0010	0914						241			
170	0014	0762						084			

C-REF-NO	001	YR	1963	DEPTH	100	WAVES	1	XO	AIR T	10.0	VIS	
CONS. NO	114	MONTH	8	MXSAMPD	00	WAVES	2	XO	WET B	08.3	STN	011
LAT	66-029N	DAY	22	NO. DPTH	8	WND-DIR	360		WW-CODE	02		
LOX	117-590W	HR	10.5	W-COLOR		WND-FCE	02		CLD-TPE	6		
MARSD	SQ 228			W-TRNSP		BARO	1017.3		CLD-AMT	7	HW	

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 200	WAVES 1 3420	AIR T 07.2	VIS
CONS. NO 115	MONTH 8	MXSAMPD 02	WAVES 2 X0	WET B 06.6	STN 087
LAT 66-041N	DAY 24	NO.DPTH 10	WND-DIR 340	WW-CCDE 01	
LON 118-190W	HR 21.0	W-COLOR	WND-FCE 02	CLD-TPE 0	
MARSC SQ 228		W-TRNSP	BARO 1017.3	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4 -P-	CPL NC3	SIO	PH
210	0000	0741								
210	0005	0630								
210	0010	0620								
210	0015	0575								
210	0020	0450								
210	0040	0360								
210	0060	0360								
210	0080	0350								
210	0100	0350								
210	0200	0350								

C-REF-NO 001	YR 1963	DEPTH 40	WAVES 1 XX	AIR T 13.3	VIS
CONS. NO 116	MONTH 8	MXSAMPD 00	WAVES 2 XX	WET B 11.8	STN 089
LAT 65-196N	DAY 25	NO.DPTH 4	WND-DIR 220	WW-CODE 02	
LON 120-011W	HR 15.5	W-COLOR	WND-FCE 01	CLD-TPE 8	
MARSC SQ 229		W-TRNSP	BARO 999.4	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4 -P-	CPL NC3	SIO	PH
155	0000	1048								
157	0005	1028								
160	0010	0901								
165	0040	0477								

C-REF-NO 001	YR 1963	DEPTH 40	WAVES 1 XX	AIR T 13.3	VIS
CONS. NO 117	MONTH 8	MXSAMPD 00	WAVES 2 XX	WET B 11.1	STN 089
LAT 65-196N	DAY 25	NO.DPTH 7	WND-DIR 220	WW-CODE 02	
LON 120-011W	HR 17.0	W-COLOR	WNC-FCE 01	CLD-TPE 8	
MARSD SQ 229		W-TRNSP	BARO 1012.3	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
170	0000	1025					015			002		808
170	0005	1010					004		084	055		792
170	0010	0820					011		112	063		792
170	0015	0600					009		070	008		798
170	0020	0500					TRC			004		791
170	0025	0460										
170	0030	0460					004			TRC		790

C-REF-NO 001	YR 1963	DEPTH 2	WAVES 1 XX	AIR T 19.4	VIS
CONS. NO 118	MONTH 8	MXSAMPD 00	WAVES 2 XX	WET B 13.9	STN 092
LAT 64-486N	DAY 26	NO.DPTH 1	WND-DIR 200	WW-CODE 02	
LON 121-222W	HR 18.0	W-COLOR	WND-FCE 04	CLD-TPE	
MARSD SQ 229		W-TRNSP	BARO 1004.3	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
180	0002	1500					007					820

C-REF-NO 001	YR 1963	DEPTH 8	WAVES 1 2022	AIR T 19.4	VIS
CONS. NO 119	MONTH 8	MXSAMPC 00	WAVES 2 XX	WET B 13.9	STN 093
LAT 64-498N	DAY 26	NO.DPTH 1	WND-DIR 200	WW-CODE 02	
LON 121-200W	HR 18.8	W-COLOR	WND-FCE 04	CLD-TPE 0	
MARSD SQ 229		W-TRNSP	BARO 1004.3	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
188	0008	1370	00040		0062	14619				033	810

C-REF-NO 001	YR 1963	DEPTH	8	WAVES 1	XX	AIR T	17.8	VIS	
CONS. NO 120	MONTH 8	MXSAMPD	00	WAVES 2	XX	WET B	13.9	STN 090	
LAT 64-547N	DAY 27	NO.DPTH	3	WNC-DIR		WW-CCODE	02		
LON 121-075W	HR 01.0	W-COLOR		WND-SPD		CLD-TPE			
MARSD SQ 229		W-TRNSP		BARO	1007.3	CLD-AMT	1	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
010	0001	1379	00040		0063	14621		103		033	810
012	0005	1372						135			
015	0008	1372						103			

C-REF-NO 001	YR 1963	DEPTH 40	WAVES 1 2923	AIR T 12.2	VIS
CONS. NO 121	MONTH 8	MXSAMPD 00	WAVES 2 X0	WET B 10.5	STN 094
LAT 65-239N	DAY 27	NO.DPTH 9	WND-DIR 290	HW-CODE 03	
LON 120-210W	HR 17.8	W-COLOR	WND-FCE 05	CLD-TPE 7	
MARSD SQ 229		W-TRNSP	BARO 1012.8	CLD-AMT 8	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 250	WAVES 1 2022	AIR T 08.9	VIS
CONS. NO 122	MONTH 8	MXSAMPD 02	WAVES 2 XX	WET B 7.7	STN 095
LAT 66-087N	DAY 29	NO.DPTH 11	WND-DIR 200	WW-CODE 02	
CON 118-491W	HR 21.5	W-COLOR	WND-FCE 02	CLD-TPE 4	
MARSD SQ 228		W-TRNSP	BARO 1015.3	CLD-AMT 7	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 410	WAVES 1 2021	AIR T 08.9	VIS
CONS. NO 123	MONTH 8	MXSAMPC 02	WAVES 2 XX	WET B 07.7	STN 088
LAT 66-165N	DAY 30	NO.DPTH 12	WND-DIR 200	WW-CODE 02	
LON 118-091W	HR 21.5	W-COLOR	WND-FCE 02	CLD-TPE 4	
MARSD SQ 228		W-TRNSP	BARO 1015.3	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	P04 -P-	CPL NO3	SIO	PH
215	0000	0799								
215	0005	0802								
215	0010	0772								
215	0015	0682								
215	0020	0582								
215	0025	0482								
215	0030	0422								
215	0050	0402								
215	0060	0400								
215	0100	0382								
215	0200	0375								
215	0250	0365								

C-REF-NO 001	YR 1963	DEPTH 427	WAVES 1 XX	AIR T		VIS
CONS. NO 124	MONTH 8	MXSAMPC 04	WAVES 2 XX	WET B		STN 033
LAT 66-042N	DAY 31	NO.DPTH 12	WND-DIR 040	WW-CCDE 03		
LON 118-10W	HR 18.5	W-COLOR	WND-FCE 03	CLD-TPE 3		
MARSD SQ 228		W-TRNSP	BARO 1010.8	CLD-AMT 4	HW	

O B S E R V E D

[illegible]

ERRATA

To publication No. 13 in the 1964 Data Record Series

GREAT BEAR LAKE, N.W.T. - 1963

Correct figures for temperature observations at the indicated depths
for station 033, page 94 are as follows:

<u>DEPTH</u>	<u>TEMPERATURE</u>
0000	0686
0005	0690
0010	0690
0015	0680
0020	0670
0025	0640
0030	0440
0050	0400
0125	0380
0200	0375
0275	0370
0405	0361

C-REF-NO 001	YR 1963	DEPTH 4	WAVES 1	XX	AIR T 04.4	VIS
CONS. NO 127	MONTH 9	MXSAMPD 00	WAVES 2	XX	WET B 02.8	STN 103
LAT 65-08CN	DAY 05	NO.DPTH 1	WND-DIR 040	WW-CODE 03		
LCN 123-300W	HR 15.0	W-COLOR	WND-FCE 03	CLD-TPE 7		
MARSD SQ 229		W-TRNSP	BARO 1011.3	CLD-AMT 7	HW	

O B S E R V E D

```

GMT  DEPTH  T E M P  S A L  OXYGEN  SGMT  SOUND  P04 -P- CPL NO3 SIO  PH
150  0000      0806

```

C-REF-NO 001	YR 1963	DEPTH	80	WAVES 1 0424	AIR T 04.4	VIS
CONS. NO 128	MONTH 9	MXSAMPD	01	WAVES 2 XX	WET B 02.8	STN 099
LAT 65-083N	DAY 05	NO.DPTH	8	WNC-DIR 040	WW-CODE 03	
LGN 123-063W	HR 17.5	W-COLOR		WNC-FCE 03	CLD-TPE 7	
MARSD SQ 229		W-TRNSP		BARO 1011.3	CLD-AMT 7	HW

O B S E R V E D

[illegible]

C-REF-NO 001	YR 1963	DEPTH 40	WAVES 1 XX	AIR T 03.9	VIS
CONS. NO 129	MONTH 9	MXSAMPD 00	WAVES 2 XX	WET B 02.2	STN 100
LAT 65-290N	DAY 06	NO.DPTH 6	WND-DIR 040	WW-CODE 83	
LON 122-560W	HR 17.0	W-COLOR	WND-FCE 03	CLD-TPE 9	
MARSD SQ 229		W-TRNSP	BARO 1009.3	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
193	0001	0793							079		
190	0005	0790							093		
186	0010	0782							112		
180	0015	0780							070		
173	0020	0778							083		
170	0030	0760							083		

C-REF-NO 001	YR 1963	DEPTH 100	WAVES 1 XX	AIR T	VIS
CONS. NO 130	MONTH 9	MXSAMPD 00	WAVES 2 XX	WET B	STN 011
LAT 66-029N	DAY 10	NO.DPTH 6	WND-DIR	WW-CODE	
LON 117-590W	HR 16.0	W-COLOR	WND-SPC	CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO	CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	CPL	NO3	SIO	PH
174	0000	0468	00038		0006	14247	002		010	035	784
171	0005	0470					010		091		763
169	0010	0466					010		010		793
165	0015	0466					017		081		793
163	0020	0466					TRC		088		792
160	0030	0464					010		095		781

C-REF-NO 001	YR 1963	DEPTH 14	WAVES 1	XX	AIR T	VIS
CONS. NO 131	MONTH 9	MXSAMPD 00	WAVES 2	XX	WET B	STN 004
LAT 66-040N	DAY 10	NO.DPTH 4	WND-DIR		WW-CODE	
LON 117-523W	HR 17.9	W-COLOR	WND-SPC		CLD-TPE	
MARSD SQ 228		W-TRNSP	BARO 1020.3		CLD-AMT	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
189	0000	0840	00037		0008	14409	008			052	033	800
186	0005	0831					TRC			056		795
183	0010	0814					010			055		789
179	0014	0788					008			060		788

C-REF-NO 001	YR 1963	DEPTH 100	WAVES 1	XX	AIR T 02.8	VIS
CONS. NO 132	MONTH 9	MXSAMPD 00	WAVES 2	XX	WET B 01.7	STN 003
LAT 66-045N	DAY 10	NO.DPTH 6	WND-DIR		WW-CODE 02	
LON 118-039W	HR 21.0	W-COLOR	WND-SPD		CLD-TPE 6	
MARSD SQ 228		W-TRNSP	BARO 1020.3		CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	CXYGEN	SGMT	SOUND	PO4	-P-	CPL	NO3	SIO	PH
210	0000	0548	00038		0005	14283	003				031	770
210	0005	0535					001					
210	0010	0490					002					
210	0015	0478					003					
210	0020	0472					002					
210	0030	0467					TRC					



ICNAF
NORWESTLANT-2 SURVEY
CANADA

No. 14
1964 Data Record Series

Canadian Oceanographic Data Centre

Programmed by the
Canadian Committee on Oceanography

1964

ROGER DUHAMEL, F. R. S. C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

Cat. No. M58-1/1964-14

CANADIAN OCEANOGRAPHIC DATA CENTRE

615 Booth Street, Ottawa 4.

Data Record

ICNAF

Norwestlant - 2 Survey

CANADA

(C.O.D.C. Reference: 01-63-003 in Part I)
(C.O.D.C. Reference: 01-63-004 in Part II)

No. 14

1964 Data Record Series

Programmed by the Canadian Committee on Oceanography

PART I

Norwestlant - 2

by

C.S.S. "BAFFIN"

FISHERIES RESEARCH BOARD OF CANADA
and
DEPARTMENT OF MINES AND TECHNICAL SURVEYS
and
DALHOUSIE UNIVERSITY

ICNAF
Norwestlant - 2 Survey
CANADA

Part I

Labrador Sea and Davis Strait

Ship: C. S. S. "Baffin"
Local cruise designation: B-5
Cruise period: May 21 - June 16, 1963
Observers: Dr. N. J. Campbell
Dr. E. H. Grainger
Dr. C. Boyd
Mr. M. Bolton

ATLANTIC OCEANOGRAPHIC GROUP - B. I. O. , Dartmouth, N. S.
ARCTIC UNIT - Montreal, Que.

MARINE SCIENCES BRANCH - B. I. O. , Dartmouth, N. S.

INSTITUTE OF OCEANOGRAPHY - Dal. U. , Halifax, N. S.

SECTION I

Description of data collection procedures

"BAFFIN"

Canadian Hydrographic Service

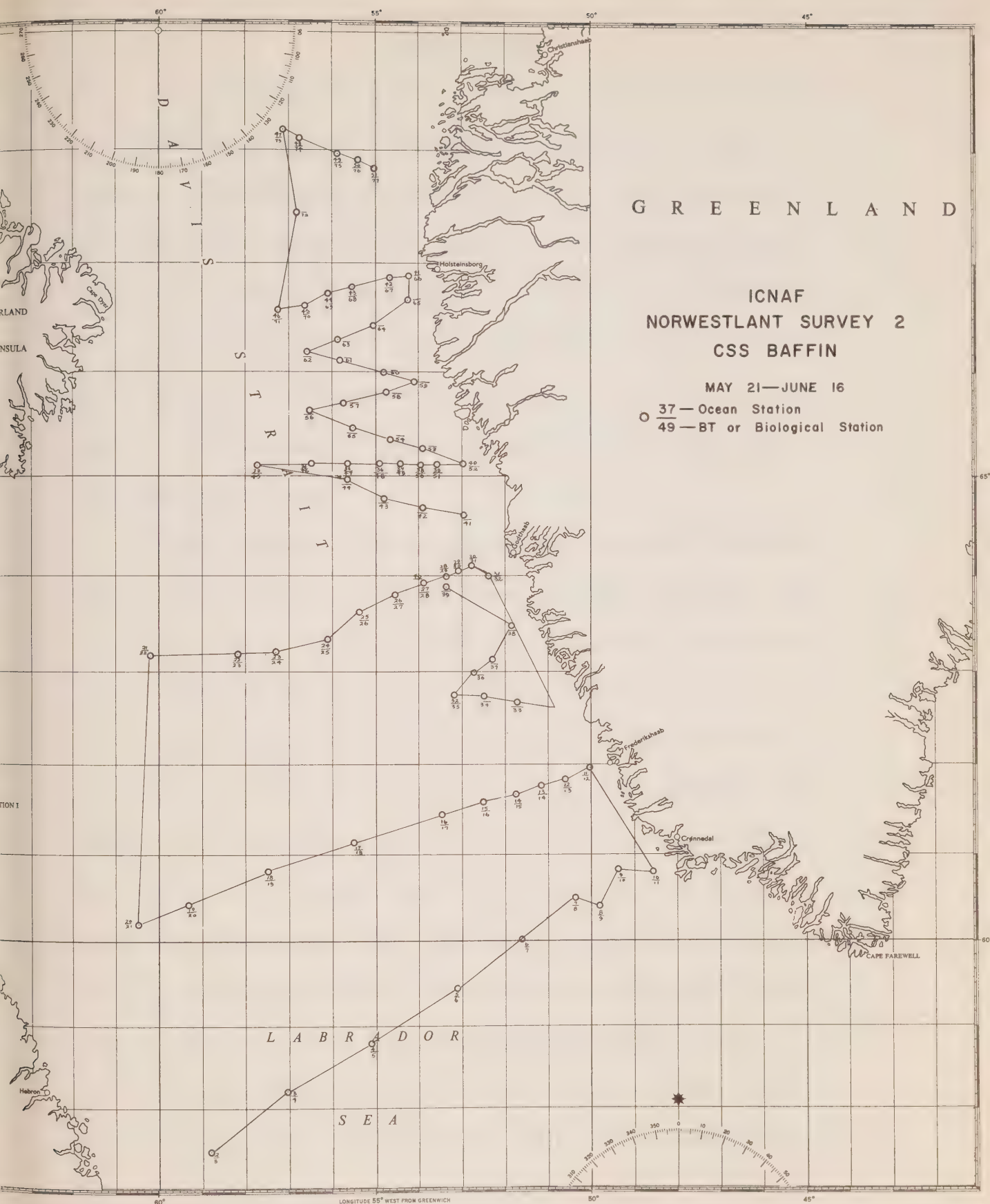


Figure 2

INTRODUCTION

The seas around Greenland have been fished on an ever increasing scale during recent years. It was apparent that if the fishery potential of the area was to be exploited on a continuing basis, a study of the environmental conditions would be needed. Accordingly, during the period from April to July of 1963 an extensive oceanographic survey of the Greenland waters was carried out under the auspices of the International Commission for the Northwest Atlantic Fisheries. Its purpose was to study the distribution and drift of the planktonic stages of the cod and redfish in relation to environmental conditions.

The survey was divided into three phases, designated Norwestlant 1, 2 and 3. Each phase lasted several weeks and required the use of five ships to cover the whole survey area. Canada, Denmark, France, West Germany, Iceland, Norway, U.K., and U.S.S.R. supplied ships for the survey.

Comparison stations were also selected so that intercalibration experiments could be conducted between ships (each ship being responsible for a particular sector). Canada participated in the second phase of the survey, Norwestlant-2, using two ships, CSS "Baffin" and CNAV "Sackville", to survey the sector allotted to her. This sector reached from a line of stations extending south of Cape Farewell through the Labrador Sea to Davis Strait (Fig. 2), and contained a total of eight ICNAF Oceanographic sections. These sections extended from the Greenland coast out to the limit of heavy ice cover. Stations within the heavy ice were occupied by USS "Atka" until damage forced her to abandon further observations within the ice.

Part I of this data record contains the observed hydrographic and chemical nutrient obtained on the "Baffin" cruise. Data obtained by "Sackville" are published in Part II of this data record. The "Atka" data are available from the Canadian Oceanographic Data Centre.

EXTRACT FROM CRUISE LOG

21 May 1963	-	Departed Halifax
26 May 1963	-	Occupied first station
3 June 1963	-	Rendez-vous with R/V "Dana", occupied biological and hydrographic comparison stations.
4 June 1963	-	Arrived Godthaab
5 June 1963	-	Visit on "Dana" and host for "Dana" scientists and officers.
6 June 1963	-	Departed Godthaab
11 June 1963	-	Completed final station
16 June 1963	-	Arrived Halifax.

The weather, in contrast to that experienced by the "Sackville", was very good. Although the probability of good weather at this time of the year is not particularly high, only one or two days had strong winds. The work, however, never stopped.

OBSERVATION PROCEDURESI ICNAF ProgramBiological Sampling

Since the biological data are reported elsewhere, the biological sampling program needs only be described briefly here. Four types observations were made -

1. Phytoplankton samples were drawn from the 10 m. bottle at every station. These were sent to Dr. M. Gillbricht, West Germany for examination.

2. One vertical haul at each station was made with a standard Hensen net from 100m. at a rate of 1/3m. per sec.
3. A simple oblique haul from 50m. with single 2m. Stramin net was taken wherever possible.
4. A single oblique haul from 50m. with Icelandic high speed sampler was taken at all biological stations and at selected hydrographic stations.

Physical and Chemical Observations

Serial observations of salinity and temperature were made at depths of 0, 10, 20, 30, 50, 75, 100, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1500, 2000, 2500, 3000, and 3500 meters, depending on the depth of the station. Oxygen, pH and chemical nutrient observations were made at 0, 10, 20, 30, 50, 75, 100 metres and the bottom four depths of a given station. Surface samples for oxygen, pH, salinity and chemical nutrients were obtained from a plastic bucket. Surface temperatures were measured in this bucket using a thermometer graduated in 0.10°C. Sea surface temperatures were monitored continuously while the ship was steaming.

Samples at depth were obtained with Knudsen reversing water bottles. The inside of these bottles were Teflon coated. At 10m. a plastic sampling bottle manufactured by the National Institute of Oceanography was used in order to secure a larger volume. When drawing water from the reversing bottles, an oxygen sample was taken first. It was drawn into a calibrated 50 ml. glass stoppered flask of German manufacture (Otto Hamp, 44 Hauptstrasse, Kiel, West Germany). Secondly, a pH sample was drawn

into a 2 oz. wide mouth polyethylene bottle and sealed with a screw cap. Thirdly, a sample for salinity determination was drawn into an 8 oz. medicine bottle and sealed with a poly-cone lined screw cap. A reference salinity from each station was taken at random depths and stored. Finally, the remainder of the water sample was drained into a one liter polyethylene bottle. This water was then filtered through a millipore filter of 1.5 micron porosity and appropriate aliquots used for the chemical nutrient determinations.

Temperatures at depth were measured with deep sea reversing thermometers of German (Richter and Wiese) or English (Negretti and Zambra) manufacture. Protected thermometers were placed single at depths down to 2000 m. and paired at greater depths. An unprotected thermometer was used at each depth from 200 m. to the bottom. Temperatures were read by two individuals and temperature corrections applied while steaming between stations.

Position measurements and meteorological observations were made by the ship's officer on watch.

II Subsidiary programs

The extensive coverage of the Labrador Sea and Davis Strait regions by the CSS "Baffin" provided an opportunity for some of the cruise participants to carry out scientific investigations in a relatively little studied area. The results of these programs will be published elsewhere by the individuals concerned.

Continuing recording of the earth's magnetic anomaly was made wherever practical. On some occasions the magnetometer could not be towed continuously as it conflicted with the collection of other data, while on others,

ice conditions prevented it being towed. Despite this some 4000 miles of magnetic profiles were obtained.

A continuous bathymetric survey was also made along the ship track. The sounding was done continuously by an EDO Transmitter and Transducer which recorded on an Alden 419 Precision Graphic Recorder. The depth was logged at either three or five minute intervals.

Biologists from the Institute of Oceanography at Dalhousie University undertook a study of the energy relationships of phytoplankton in the Davis Strait area. A new technique for estimating zooplankton abundance based on an assay for succinic acid dehydrogenase was tested and it was tested and it was found to give results that were considered significant.

Samples for fluoride determination were taken at selected positions and depths as requested by Dr. J. R. Riley of the University of Liverpool, England.

Samples for boron determination were taken at every station from the bottom bottle for Dr. A. A. Mills of Dalhousie University, Halifax, N. S.

LABORATORY PROCEDURES - METHODS OF ANALYSIS

The salinity determinations were made on an inductive salinometer, Model 501MK III Serial No. 8, manufactured by Auto-Lab Industries Pty Ltd., Sydney, Australia (Brown and Hamon 1961). These analyses were completed within one or two days of collection.

Dissolved oxygen was determined by a modified Winkler method using calibrated 50 ml. glass stoppered bottles. Reagent concentrations:

- (1) 40 g manganous chloride per 100 ml distilled water.
- (2) 30 g potassium hydroxide plus 60 g potassium iodide per 100 ml distilled water.

(3) 50 volume percent sulphuric acid. Standardization according to Strickland and Parsons (1960).

pH was determined using a Radiometer Model 4 pH meter with a reproducibility of ± 0.01 pH units, method according to Strickland and Parsons (1960).

Phosphate was determined by the modified single solution method of Murphy and Riley. Analysis was completed within four hours of collection using a Beckman DU spectrophotometer equipped with 10 cm cells.

Silicate was determined by a method proposed by Dr. Grasshoff of Kiel University which is described briefly: two filtered samples of 50 ml each were pipetted into 100 ml plastic bottles containing 1 ml of mono-chloroacetic acid each. One ml of a solution containing 121 g sodium molybdate dihydrate per liter of silica-free water was added to 50 ml of filtered seawater. The intensity of the yellow colour was measured after 2 hours on a Beckman DU spectrophotometer against filtered seawater at 390 millimicrons.

Nitrate and nitrite were determined by the methods described by Strickland and Parsons (1960). Because of the rather long time required for the nitrate analyses (about 24 hours), it was not possible to carry them out at every station. Instead they were determined at selected stations in deep water and on the Greenland shelf for each station.

Alkalinity determinations were made according to the method described by Strickland and Parsons (1960). The results are not included in this report but can be obtained from the Bedford Institute of Oceanography.

Acknowledgements

We wish to take this opportunity to thank the personnel of the Arctic Unit of the Fisheries Research Board of Canada, Montreal, and of the Institute of Oceanography, Dalhousie University, Halifax, for their participation in the cruise. Also we wish to thank the Royal Canadian Navy for the loan of the MUFAX "Weather chart recorder" and the Royal Canadian Air Force for the help of a meteorological officer to operate the machine and to provide weather information. Also sincere thanks are due to the entire ship's personnel for the interest shown in the scientific work and for the help given to the oceanographic work such as operating the winches, etc.

BATHYTHERMOGRAPH DATA

A total of 83 bathythermographs were taken during the cruise and later on processed at the Bathythermograph Data Centre, Bedford Institute of Oceanography, Dartmouth, N.S.

PERSONNEL

Observers at sea

N. J. Campbell	A. O. G.
J. R. Chevrier	A. O. G.
E. H. Grainger	Arctic Unit
J. Watton	Arctic Unit
A. R. Coote	DM&TS
M. Bolton	DM&TS
W. Young	DM&TS
R. Hiltz	DM&TS
V. Beck	DM&TS
M. E. MacLean	DM&TS
R. Bailey	DM&TS (Student)
W. Crone	DM&TS (Student)
R. Hurdal	DM&TS (Student)
G. Chapman	DM&TS (Student)
C. Boyd	IODAL
D. Barrett	IODAL
K. Manchester	IODAL
S. Pearre	IODAL
B. Hargraves	IODAL
R. Cook	IODAL
G. Drapeau	Marine School, Rimouski
J. MacLauchlan	R. C. A. F.

Data analyses

Oceanographic Data	N. J. Campbell
	J. R. Chevrier
	M. E. MacLean
	M. Bolton
	G. Drapeau
	G. Chapman
Salinity data	- R. Hiltz

Chemical data

A. R. Coote
W. Young
G. Drapeau
R. Hurdal
M. E. MacLean
C. C. Cunningham
W. Crone
V. Beck
G. Chapman

Geophysical data

K. Manchester
D. Barrett
R. Bailey

Biological data

E. H. Grainger
C. Boyd
J. Watton
R. Cook
B. Hargraves
S. Pearre

SECTION II

Description of the machine-generated data record

INTRODUCTION

This section applies to the machine processing phase of the data reduction and computation cycle.

The oceanographic data previously recorded on CODC data summary forms, a sample of which is shown on the next page, are transferred to punch cards for subsequent electronic data processing on an IBM 1620 computer, using CODC's OCEANS II program. In addition to computing routine derived quantities, the program carries out unit and format conversions, range checks, plausibility tests, internal editing, and if required, interpolation at standard oceanographic depths. If interpolations are carried out, additional derived quantities are computed.

After the data have been processed, the data record is prepared using an IBM 1401 computer configuration with the OCEAN REPORT III program, which provides for pre-edited high speed print-out on continuous direct-image masters. These masters subsequently yield the required volume of copies for distribution.

Provision has been made to enter an "estimate of precision" for each observed variable selected for interpolation at the standard oceanographic depth. The precision depends on the instrument or technique used to determine the variable.

A standard precision stated as a standard deviation (σ) can be determined for each instrument or technique under routine field conditions by making duplicate determinations of the variables for a homogeneous sample of sea water. These standard deviations are given for each cruise under "GENERAL INFORMATION" of section II of the data record.

The measurement error estimate of a specific observation in this data record, is stated as a multiple of the standard deviation derived as above, and entered in a column immediately to the right of the reported variable. In order to distinguish it from an additional decimal digit, the measurement error estimate is recorded alphabetically, (i.e., $1\sigma = A$, $2\sigma = B$, etc.; in this data record "A" is suppressed).

An option is provided with respect to the measurement of the salinity variable. If observed to three decimal digits, the last digit takes the place of the measurement error estimate.

In the past, a number of methods for both manual and machine interpolation have been developed. Studies and comparisons of the several methods have shown that no single method is universally acceptable. The manual methods are the most elaborate and flexible, but often require subjective decisions. In machine interpolation, all the present methods fail to yield acceptable results under some circumstances. Hence, it is considered necessary to qualify interpolated values by stating an "interpolation error estimate" derived from the particular interpolation formula used. There are two purposes in stating the error estimates; first, to give an indication of the quality of interpolated data; second, to allow the oceanographer to redesign his observational procedures in order to reduce interpolation errors in future observations.

The interpolation scheme chosen for the OCEANS II program consists of a combination of two 3-point interpolations using the Lagrangian interpolation polynomial, as recommended by Rattray (1962). A parabola is fitted through three values of a given variable (T, S, O_2) considered as a function of depth. The two interpolation parabolas require a total of four points (observed depths). The middle points are common to both parabolas. The average of the two values obtained from the parabolas at standard depth is taken as the interpolated value, and a function of their difference as an estimate of the interpolation error.

This function combined with the "measurement error estimate" comprises the "combined measurement and interpolation error estimate". It is expressed as a multiple of the standard deviation of measurement (σ) under normal routine field conditions by:

CANADIAN OCEANOGRAPHIC DATA CENTRE

1 IDENT. CODE		2 LATITUDE (N = +)		3 LONGITUDE (W = +)		5 DATE		6 TIME		7 DEPTH		9 DEPTHS		YVESSEL								
COUNTRY	INST.	DEG.	MIN.	DEG.	MIN.	YEAR	MONTH	DAY	HOURS	MIN.	TO BOTTOM	NO.	ENTERED BY	CHECKED BY								
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	1	1	8																			

$$\frac{\sigma_i}{\sigma} = \left\{ \frac{(\Delta V_i)^2}{\sigma^2} + \sum_{n=j-2}^{j+1} (\gamma_n)^2 \left(\frac{\sigma_n}{\sigma} \right)^2 \right\}^{1/2}, \text{ where}$$

- σ_i = Standard deviation of the combined error estimates at standard oceanographic depth,
 ΔV_i = the interpolation error estimate of variable "V" at standard oceanographic depth = $1/3 (V_{i_1} - V_{i_2})$
 γ = Interpolation polynomial coefficient.
 Z_j = Observed depth.
 Z_i = Standard oceanographic depth, such that: $Z_{j-2} < Z_{j-1} < Z_i < Z_j < Z_{j+1}$

The integral part of the fraction $\frac{\sigma_i}{\sigma}$, if ≥ 2 , is reported in this Data Record following the interpolated variable. It represents the **combined measurement and interpolation error estimate**. In order to distinguish it from an additional decimal digit, it is recorded alphabetically (e.g.: 2 as "B", 3 as "C", etc.).

With respect to the interpolated value of the salinity variable if reported to three decimal digits, the **interpolation error estimate** is given only when $\frac{\sigma_i}{\sigma} \geq 2$ (the salinity is then recorded to two decimal places). If less than 2, the mean obtained from the two interpolation parabolas is reported to three decimal places.

EXPLANATION OF DATA RECORD HEADINGS

MASTER HEADINGS

(1) C-REF-NO	(6) YR	(10) DEPTH	(15) WAVES 1	(20) AIR T	(25) VIS
(2) CONS. NO	(7) MONTH	(11) MXSAMPD	(16) WAVES 2	(21) WET B	(26) STN
(3) LAT	(8) DAY	(12) NO. DPTH	(17) WND-DIR	(22) WW-CODE	
(4) LON	(9) HR	(13) W-COLOR	(18) WND-FCE	(23) CLD-TPE	
(5) MARSD SQ		(14) W-TRNSP	(19) BARO	(24) CLD-AMT	(27) HW

(1) CRUISE REFER-
ENCE NUMBER:

Assigned by the Institute. Commences with 001 at the beginning of each year (effective Jan. 1, 1963). Prior to that date the C.R.N. was a number designated by C.O.D.C.

(2) CONSECUTIVE
NUMBER:

Indicates the chronological order in which the stations were occupied.

(3) LATITUDE:

Indicate the position of the platform at the time of observation

(4) LONGITUDE:

(5) MARSDEN SQUARE: Designates the geographic area code (see Marsden square chart) in which the observation is located.

(6) YEAR:

(7) MONTH:

(8) DAY:

(9) HOUR:

The time (Greenwich Mean Time) at which the Master-card data were recorded.

It is reported to tenths of hours (Table 1).

If an "X" precedes the value for HOUR, (prior to Jan. 1, 1963) it indicates that the reported time is doubtful.

(10) DEPTH:

The sounding reported in metres. If corrected, this is stated in the "GENERAL INFORMATION" chapter of section II. Charted depths are denoted by the sounding value, preceded by the letter "C".

(11) MAXIMUM

SAMPLING DEPTH: A code to indicate the deepest sampling depth (used for high speed sorting).

00 m - 50 m = 00

51 m - 150 m = 01

151 m - 250 m = 02

etc.

- (12) NUMBER OF DEPTHS: The number of levels observed (this is entered to initiate a computer safety check, guarding against the loss of punch cards).
- (13) WATER COLOUR: A code based on the percentage of yellow (see table 2 and NOTE under FIELD "14" below).
- (14) WATER TRANSPARENCY: The depth in metres at which a Secchi disc (white disc, 30 cm. in diameter) just disappears from view, or the optical density expressed in percentage;
- NOTE: The "GENERAL INFORMATION" chapter in section II of the data record will state which method was used.
- (15) WAVES 1
($d_w d_w P_w H_w$ -code): The direction, period and height of the wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (16) WAVES 2
($d_w d_w P_w H_w$ -code): The direction, period and height of the predominant other-than wind-propagated wave system. (See Tables 3, 4 and 5). Ref: World Meteorological Organization Code 3155.
- (17) WIND DIRECTION: The true direction to the nearest 10 degrees from which the wind is blowing. Wind direction 990 means:—wind variable or direction unknown.
- (18) WIND FORCE
(WND-FCE): Beaufort Notation (See Table 6).
- WIND SPEED
(WND-SPD): Anemometer reading reported in metres per second. Instrument height reported in "GENERAL INFORMATION" chapter of section II.
- (19) BAROMETER: The barometric pressure reported in millibars: the "GENERAL INFORMATION" chapter in Section II of the data record will state the type of instrument used.
- (20) AIR TEMPERATURE: In degrees Celsius.
- (21) WET BULB: In degrees Celsius.
- (22) ww CODE: Present Weather Code (See Table 7). Ref: WMO Code 4677
- (23) CLOUD TYPE: The type of predominating clouds (See Table 8). Ref: WMO Code 0500.
- (24) CLOUD AMOUNT: The sky coverage in eighths (See Table 9) Ref: WMO Code 2700
- (25) VISIBILITY: Visibility at the surface (See Table 10). Ref: WMO Code 4300.
- (26) STATION: A station reference number, assigned by the institute prior to, or during the survey.
- (27) HOURS AFTER HIGH WATER: Indicates the state of the tide for nearshore observations.

OBSERVED DATA HEADINGS

(1) GMT	(2) DEPTH	(3) TEMP	(4) SAL	(5) OXYGEN	(6) SGMT
(7) SOUND	(8) PO_4	(9) -P-	(10) NO_2	(11) NO_3	(12) SiO_3
					(13) pH.

NOTE: Headings (1) to (7) will always be present. Headings (8) to (13) appear only when one or more additional chemical entries were made.

(1) G.M.T.: The Greenwich Mean Time of (in-situ) thermometer inversion and sea water sample collection.

When a multiple cast was initiated prior to and continued after midnight, the times indicated are uninterrupted by the change of day and appear beyond 24.0 hours. This will be accompanied by a statement: "MULTIPLE CAST CONTINUED NEXT DAY", which is printed following the last level of observed values.

(2) DEPTH: The depth in metres at the moment the oceanographic bottle reversed.

(3) TEMPERATURE: Temperatures from deepsea reversing thermometers, read to 0.01° C. Surface temperature measurement procedures are described in the chapter "OBSERVATION PROCEDURES" of section I, and/or the "GENERAL INFORMATION" chapter of this section. An alphabetical character following the Temperature value represents the measurement error estimate referred to in the INTRODUCTION to this section.

(4) SALINITY: Salinity as defined by: $S = 0.03 + 1.805 C1\%$, reported in:
 a. 1/100 parts per 1000, or
 b. 1/1000 parts per 1000. NOTE: See also p. 42

In case a: an alphabetical character following the value is the measurement error estimate as referred to under (3)

In case b: no error estimate indication is provided for, but an additional decimal digit takes its place.

(5) OXYGEN: The concentration of dissolved oxygen expressed in millilitres per litre to 2 decimal places. An alphabetical character following the value is the measurement error estimate as referred to under (3).

(6) SIGMA-T: The specific gravity anomaly as defined by: $(\text{Specific gravity} - 1) \times 10^3$ (e.g., σ_t reported as 2456, reads 24.56, and corresponds to a specific gravity of 1.02456).

(7) SOUND: The sound velocity is reported in m/sec. to 1 decimal place (e.g., 1437.9 m/sec.). The computation is carried out using Wilson's formula (1960), expressed in terms of temperature, salinity and total pressure.

(8) PO ₄	Phosphate — Phosphorus reported to hundredths of microgram-atoms per litre.
(9) -P-	Total Phosphorus reported to hundredths of microgram-atoms per litre.
(10) NO ₂	Nitrite-Nitrogen reported to hundredths of microgram-atoms per litre — No dissolved nitrogen included —
(11) NO ₃	Nitrate-Nitrogen reported to tenths of microgram-atoms per litre.
(12) SiO ₃	Silicate-Silicon reported in whole microgram-atoms per litre.
(13) pH	The pH value.

NOTE: "TRC" (trace) is reported when a chemical entry has a value smaller than the standard deviation of measurement for that particular variable.

INTERPOLATED DATA HEADINGS

(1) DEPTH	(2) TEMP	(3) SAL	(4) OXYGEN	(5) SGMT	(6) SOUND
(7) DELTA-D	(8) POT-EN	(9) SVA.			

- (1) DEPTH: Standard Oceanographic Depth in whole metres, as well as additional depths: 125, 175, 225, 3500, 4500, 5500, 6500, 7500, 8500, 9500.
- (2) TEMPERATURE: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "INTRODUCTION" to section II of the data record).
- (3) SALINITY:
- A. The reported salinity values are observed to three decimal places.
 - (i) the interpolation error estimate is less than twice the standard deviation of measurement
 - the interpolated value is reported to three decimal places (e.g., 30.139).
 - (ii) the interpolation error estimate is equal to or greater than twice the standard deviation of measurement.
 - the interpolated value is reported to two decimal places, and followed by the interpolation error estimate (e.g., 29.23C).
 - B. The reported salinity values are observed to two decimal places and followed by the measurement error estimate.
 - the interpolated value is reported to two decimal places, and followed by the combined measurement and interpolation error estimate (e.g., 30.59B).
- (4) OXYGEN: Interpolated value at standard depth, followed by the combined measurement and interpolation error estimate (see "Introduction" to section II of the data record).

(5) SIGMA-T: Computed from temperature and salinity values at standard oceanographic depth.

(6) SOUND
VELOCITY: Computed from temperature and salinity values at standard oceanographic depth, using Wilson's formula (1960).

(7) DELTA-D: The geo-potential anomaly as defined by:

$$\Delta D = \int_0^P \delta dp$$

ΔD is expressed in dynamic metres (10^5 ergs/gram) and recorded to three decimal places (e.g., 2,345 dyn. metres).

(8) POTENTIAL
ENERGY
ANOMALY:

The Potential energy anomaly χ as defined by:

$$\chi = 1/g \int_0^P p \delta dp = \int_0^Z \rho p \delta dz$$

χ is expressed in units of 10^8 ergs/cm² and recorded to two decimal places (e.g., 116.44).

(9) SPECIFIC
VOLUME
ANOMALY:

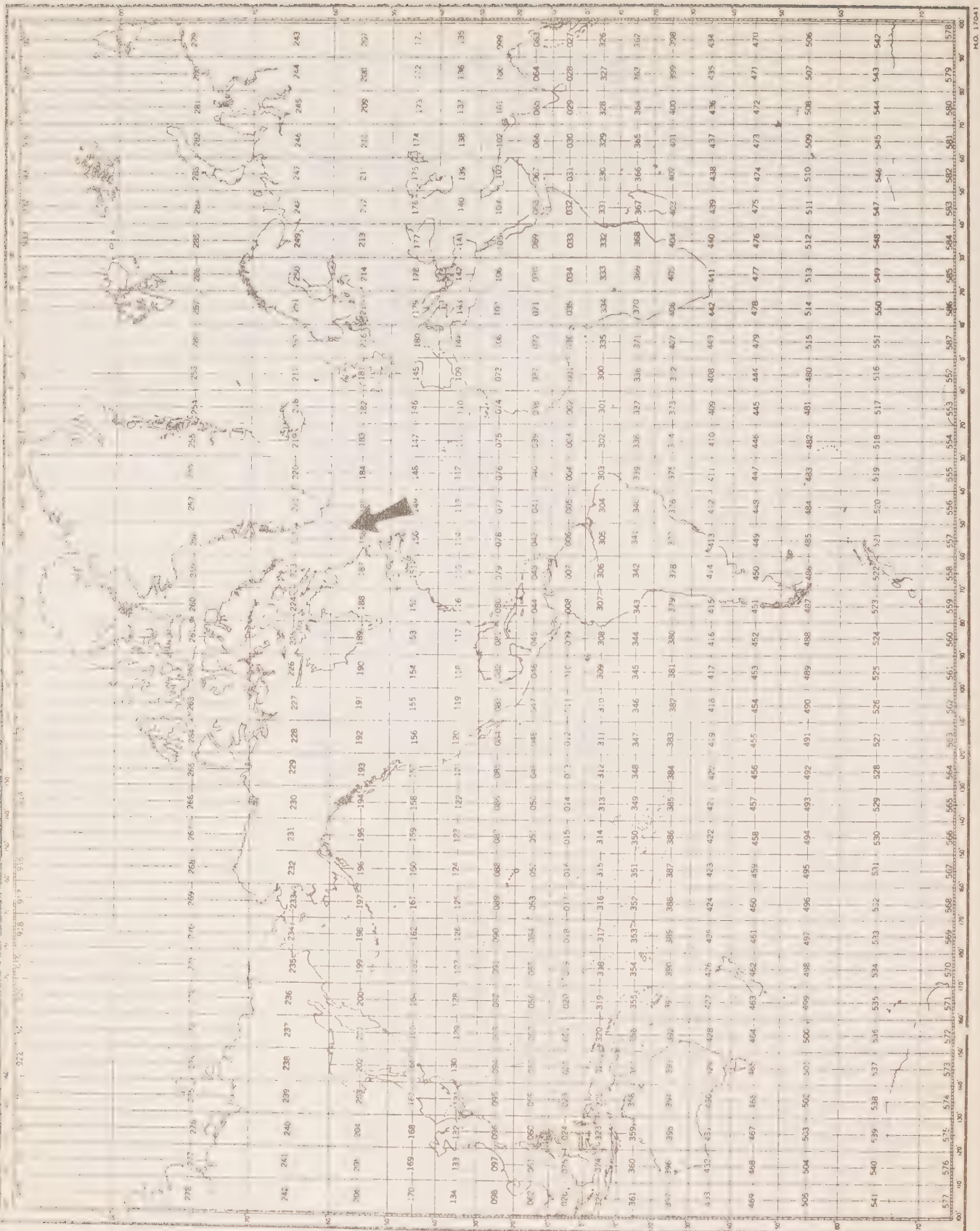
The specific volume anomaly as defined by:

$$\delta = \alpha - \alpha_{35.0.P}$$

δ is expressed in ml/gr, and conventionally reported as $10^5 \delta$, to one decimal place (i.e., δ reported as 1234, reads 123.4, and corresponds to a specific volume anomaly of 0.001234 ml/gr.).

SPECIAL CHARACTERS

- ‡ (Record mark): is used to indicate inconsistencies which are printed in an area below the "Observed Data". A corresponding record mark at the extreme left hand side indicates the level at which the inconsistency occurs
- * (Asterisk): this character may occur in the **interpolated** portion of the data record. It is printed at the extreme left hand side of the page, when three or more standard depth levels fall within any one **observed depth interval**. The **third**, and all consequent levels within that interval are preceded by the asterisk to indicate that more than **two** machine interpolations were carried out, utilizing the same set of interpolation parabolas.



MARSDEN SQUARE CHART

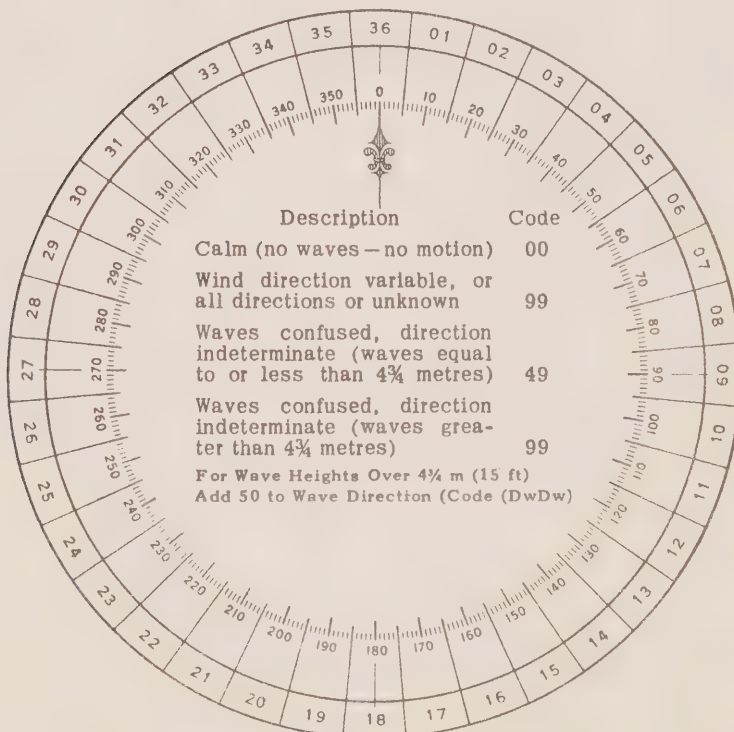
Table 1
CONVERSION
MINUTES TO $\frac{1}{10}$ HRS.

Minutes	Tenths Hrs.
00-03	0
04-08	1
09-15	2
16-20	3
21-27	4
28-32	5
33-39	6
40-44	7
45-51	8
52-56	9
57-59	0 (next HR.)

Table 2
WATER COLOR CODE
Based on Percentage Yellow

Code:	Description
00	Deep Blue
10	Blue
20	Greenish Blue
30	Bluish Greep
40	Green
50	Light Green
60	Yellowish Green
70	Yellow Green
80	Green Yellow
90	Greenish Yellow
99	Yellow

Table 3. DIRECTION CODE (dd)



NOTE:

Always use the true direction from which the wind is blowing, or the direction from which Waves I (sea), or Waves II (swell) come.

Table 4. PERIOD OF THE WAVES (P_w)
(Measure to the Nearest Second)

Code:	Period in Seconds:	Code:	Period in Seconds:
2	5 sec. or less	8	16 or 17 sec.
3	6 or 7 sec.	9	18 or 19 sec.
4	8 or 9 sec.	0	20 or 21 sec.
5	10 or 11 sec.	1	Over 21 sec.
6	12 or 13 sec.	X	Calm, or period not determined
7	14 or 15 sec.		

Table 5. HEIGHT OF THE WAVES (H_w)

- The average value of the wave height (vertical distance between trough and crest) is reported, as obtained from the larger well formed waves of the wave system being observed.
- Each code figure provides for reporting a range of heights. For example: 1 = $\frac{1}{4}$ m (1 ft) to $\frac{3}{4}$ m ($2\frac{1}{2}$ ft); 5 = $2\frac{1}{4}$ m (7 ft) to $2\frac{3}{4}$ m (9 ft); 9 = $4\frac{1}{4}$ m ($13\frac{1}{2}$ ft) to $4\frac{3}{4}$ m (15 ft), etc.
- If a wave height comes exactly midway between the heights corresponding to two code figures, the lower code figure is reported; e.g. a height of $2\frac{3}{4}$ m is reported by code figure 5.

Code			Code
0	Less than ¼ m (1 ft)	Add 50 to Dw Dw	0 5 m (16 ft)
1	½ m (1½ ft)		1 5½ m (17½ ft)
2	1 m (3 ft)		2 6 m (19 ft)
3	1½ m (5 ft)		3 6½ m (21 ft)
4	2 m (6½ ft)		4 7 m (22½ ft)
5	2½ m (8 ft)		5 7½ m (24 ft)
6	3 m (9½ ft)		6 8 m (25½ ft)
7	3½ m (11 ft)		7 8½ m (27 ft)
8	4 m (13 ft)		8 9 m (29 ft)
9	4½ m (14 ft)		9 9½ m (30½ ft) or more
x	Height not determined		

Table 6. WIND FORCE CODE

The Beaufort force of the wind is estimated from the appearance of the sea surface, according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the "lag" effect between the wind increasing and the sea getting up; and the influence of "fetch", depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind force by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests.	Light Air
02	Small wavelets; crests have a glassy appearance and do not break.	Light Breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	Gentle Breeze
04	Small waves, becoming longer; fairly frequent white horses.	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh Breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong Breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Near Gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind.	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility.	Strong Gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected.	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected.	Violent Storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected.	Hurricane

Table 7. PRESENT WEATHER

W.W. CODE

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure		ww	
No meteors except photometeors	00	Cloud development not observed or not observable	characteristic change of the state of sky during the past hour
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
	03	Clouds generally forming or developing	
Haze, dust, sand or smoke	04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes	
	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen	
	08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	
	11	Patches of	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More of less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precepitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel clouds	

ww = 20 - 29	20	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation	not falling as shower(s)
	21	Drizzle (not freezing) or snow grains	
	22	Rain (not freezing)	
	23	Snow	
	24	Rain and snow or ice pellets, type (a)	
	25	Freezing drizzle or freezing rain	
	26	Shower(s) of rain	
	27	Shower(s) of snow, or of rain and snow	
	28	Shower(s) of hail, or of rain and hail	
	29	Fog or ice fog	
	29	Thunderstorm (with or without precipitation)	
ww = 30 - 39	30	Duststorm, sandstorm, drifting or blowing snow	
	31	Slight or moderate dust-storm or sand-storm	- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	32		
	33	Severe dust-storm or sand-storm	- has decreased during the preceding hour - no appreciable change during the preceding hour - has begun or has increased during the preceding hour
	34		
	35		
	36	Slight or moderate blowing snow	generally low (below eye level)
	37	Heavy drifting snow	
	38	Slight or moderate blowing snow	generally high (above eye level)
	39	Heavy blowing snow	
ww = 40 - 49	40	Fog or ice fog at the time of observation	
	41	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	42	Fog or ice fog in patches	
	43	Fog or ice fog, sky visible	has become thinner during the preceding hour
	44	Fog or ice fog, sky invisible	
	45	Fog or ice fog, sky visible	no appreciable change during the preceding hour
	46	Fog or ice fog, sky invisible	
	47	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
	48	Fog or ice fog, sky invisible	
	49	Fog, depositing rime, sky visible	
	49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 - 59 Drizzle

- | | | | |
|----|--|---|--------------------------------------|
| 50 | Drizzle, not freezing, intermittent | { | slight at time of observation |
| 51 | Drizzle, not freezing, continuous | | |
| 52 | Drizzle, not freezing, intermittent | { | moderate at time of observation |
| 53 | Drizzle, not freezing, continuous | | |
| 54 | Drizzle, not freezing, intermittent | { | heavy (dense) at time of observation |
| 55 | Drizzle, not freezing, continuous | | |
| 56 | Drizzle, freezing, slight | | |
| 57 | Drizzle, freezing, moderate or heavy (dense) | | |
| 58 | Drizzle and rain, slight | | |
| 59 | Drizzle and rain, moderate or heavy | | |

ww = 60 - 69 Rain

- | | | | |
|----|---|---|---------------------------------|
| 60 | Rain, not freezing, intermittent | { | slight at time of observation |
| 61 | Rain, not freezing, continuous | | |
| 62 | Rain, not freezing, intermittent | { | moderate at time of observation |
| 63 | Rain, not freezing, continuous | | |
| 64 | Rain, not freezing, intermittent | { | heavy at time of observation |
| 65 | Rain, not freezing, continuous | | |
| 66 | Rain, freezing, slight | | |
| 67 | Rain, freezing, moderate or heavy | | |
| 68 | Rain or drizzle and snow, slight | | |
| 69 | Rain or drizzle and snow, moderate or heavy | | |

70 - 79 Solid precipitation not in showers

- | | | | |
|----|---|---|---------------------------------|
| ww | | | |
| 70 | Intermittent fall of snow flakes | { | slight at time of observation |
| 71 | Continuous fall of snow flakes | | |
| 72 | Intermittent fall of snow flakes | { | moderate at time of observation |
| 73 | Continuous fall of snow flakes | | |
| 74 | Intermittent fall of snow flakes | { | heavy at time of observation |
| 75 | Continuous fall of snow flakes | | |
| 76 | Ice prisms (with or without fog) | | |
| 77 | Snow grains (with or without fog) | | |
| 78 | Isolated starlike snow crystals (with or without fog) | | |
| 79 | Ice pellets, type (a) | | |

ww = 80 - 99 Showery precipitation, or precipitation with current or recent thunderstorm

- | | | | |
|----|--|---|---|
| 80 | Rain shower(s), slight | | |
| 81 | Rain shower(s), moderate or heavy | | |
| 82 | Rain shower(s), violent | | |
| 83 | Shower(s) of rain and snow mixed, slight | | |
| 84 | Shower(s) of rain and snow mixed, moderate or heavy | | |
| 85 | Snow shower(s), slight | | |
| 86 | Snow shower(s), moderate or heavy | | |
| 87 | Shower(s) of snow pellets or ice pellets, type (b), with or without rain | { | - slight |
| 88 | or rain and snow mixed | | |
| 89 | Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder | { | - moderate or heavy |
| 90 | | | |
| 91 | Slight rain at time of observation | { | thunderstorm during the preceding hour but not at time of observation |
| 92 | Moderate or heavy rain at time of observation | | |
| 93 | Slight snow, or rain and snow mixed or hail at time of observation | | |
| 94 | Moderate or heavy snow, or rain and snow mixed or hail at time of observation | { | thunderstorm at time of observation |
| 95 | Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation | | |
| 96 | Thunderstorm, slight or moderate, with hail at time of observation | | |
| 97 | Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation | { | |
| 98 | Thunderstorm, combined with duststorm or sandstorm at time of observation | | |
| 99 | Thunderstorm, heavy, with hail at time of observation | | |

PRECIPITATION ON STATION AT TIME OF OBSERVATION

Table 8. CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus Ns
1	Cirrocumulus Cc	6	Stratocumulus Sc
2	Cirrostratus Cs	7	Stratus St
3	Alto cumulus Ac	8	Cumulus Cu
4	Altostratus As	9	Cumulonimbus Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

Table 9. CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = $\frac{1}{8}$ of the sky covered

Table 10. VISIBILITY

Code	Estimate of hor. Visibility
90	Less than 50 metres (less than 55 yards)
91	50-200 metres (approx. 55-220 yards)
92	200-500 metres (approx. 220-550 yards)
93	500-1,000 metres (approx. 550 yards- $\frac{5}{8}$ n.m.)
94	1-2 km (approx. $\frac{5}{8}$ -1 n.m.)
95	2-4 km (approx. 1-2 n.m.)
96	4-10 km (approx. 2-6 n.m.)
97	10-20 km (approx. 6-12 n.m.)
98	20-50 km (approx. 12-30 n.m.)
99	50 km or more (30 n.m. or more)

Note: n.m. = nautical mile

GENERAL INFORMATION

<u>Institute:</u>	Atlantic Oceanographic Group
<u>Observation platform:</u>	C. S. S. "Baffin"
<u>Vessel's cruising speed:</u>	13 knots
<u>Total number of stations occupied:</u>	51
<u>Anemometer height above sea level:</u>	22 metres
<u>Barometer readings</u>	from an aneroid barometer and were corrected prior to recording
<u>Air temperature</u>	observed from a sling psychrometer
<u>Wet bulb temperature</u>	observed from a sling psychrometer
<u>Surface sea water temperature</u>	obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature:	0.02
Salinity:	0.003
Oxygen:	0.05

N. B. Salinities were corrected according to Table Four of Cox and Folkard (1963) See p. 42

The 1963 ICNAF surveys have revealed certain small but appreciable differences in salinities determined on the same water with Australian (Auto-Lab) and British (N. I. O.) salinity meters. This has been analysed in the unpublished manuscript:

Discrepancies between Auto-Lab and N. I. O. Salinometers

By R. A. Cox, National Institute of Oceanography, and

A. R. Folkard, Fisheries Laboratory, Lowestoft, U.K.

This data record of the two Canadian ICNAF cruises incorporates the corrections as tabulated on p. 8 of this paper in Table Four:

Corrections to salinometer results on "ICNAF" survey

A. Low salinities, below 35‰

Increased all observations on N. I. O. salinometers as follows:

Salinity	Increase
30.0	0.021
30.5	0.020
31.0	0.019
31.5	0.018
32.0	0.016
32.5	0.014
33.0	0.012
33.5	0.010
34.0	0.008
34.5	0.004
35.0	nil

B. High salinities, above 35‰

Increased all observations on Auto-Lab salinometers as follows:

Salinity	Increase
35.0	nil
35.5	0.001
36.0	0.002
37.0	0.003
38.0	0.002
39.0	0.002

SECTION III

Serial oceanographic data

C-REF-NO 003 YR 1963 DEPTH 203 WAVES 1 18X1 AIR T 05.4 VIS 97
 CONS. NO 001 MONTH 5 MXSAMPD 01 WAVES 2 00X0 WET B 04.8 STN
 LAT 48-263N DAY 23 NO.DPTH 8 WND-DIR 180 WW-CODE
 LON 52-292W HR 21.5 W-COLOR WND-SPD 05 CLD-TPE 7
 MARSD SQ 150 W-TRNSP BARO 1015.3 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
215	0000	0430 B	32338	855	2566	14645						
215	0010		32638	871								
215	0020	0190	32717	799	2617	14550						
215	0030	0083	32752	928	2627	14504						
215	0050	-0134	32921	741	2650	14410						
215	0075	-0158	32966	806	2654	14403						
215	0100	-0154	33038	806	2660	14410						
215	0149	-0092	33229	806	2674	14450						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0430 B	32338	855	2566	14645	0000	00000	2335
0010	0310	32638	871	2602	14600	0022	00001	2000
0020	0190	32717	799	2617	14550	0041	00004	1850
0030	0083	32752	928	2627	14504	0059	00009	1757
0050	-0134	32921	741	2650	14410	0093	00022	1536
0075	-0158	32966	806	2654	14403	0131	00046	1494
0100	-0154	33038	806	2660	14410	0168	00079	1438
0125	-0134	33124	826 B	2667	14425	0203	00120	1375
0150	-0090	33234	805	2674	14452	0237	00168	1305

C-REF-NO 003 YR 1963 DEPTH 1701 WAVES 1 01X2 AIR T 03.0 VIS 98
 CONS. NO 002 MONTH 5 MXSAMPD 15 WAVES 2 01X2 WET B 00.9 STN
 LAT 57-270N DAY 26 NO.DPTH 18 WND-DIR 010 WW-CODE 02
 LUN 58-503W HR 13.2 W-COLOR WND-SPD 04 CLD-TPE 8
 MARSD SQ 186 W-TRNSP BARO 1017.0 CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
132	0000	0400 B	34867	753	2770	14667	184	009	063	011	817
132	0010	0332	34735	763	2767	14638	069	009	107	008	823
132	0020	0338	34744	757	2767	14642	065	008	093	008	822
132	0030	0344	34769	756	2768	14647	077	009	105	008	824
132	0050	0354	34810	747	2770	14655	077	010	097	008	820
132	0075	0358	34824	743	2771	14661	081	009	114	009	820
132	0099	0360	34865	717	2774	14666	101	010	145		818
132	0149	0360	34874		2775	14675					
132	0199	0358	34878		2775	14682					
132	0298	0357	34882		2776	14698					
132	0398	0358	34883		2776	14715					
121	0505	0356	34879		2776	14732					
121	0598	0357	34884		2776	14748					
121	0786	0356	34888		2776	14778					
121	0968	0354	34892	674	2777	14808	114			012	806
121	1154	0352	34896	667	2777	14838	107			012	811
121	1444	0340	34910	654	2780	14882	117			013	810
121	1542	0334	34906	647	2780	14896	137			014	812

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0400 B	34867	753	2770	14667	0000	00000	0402
0010	0332	34735	763	2767	14638	0004	00000	0437
0020	0338	34744	757	2767	14642	0009	00001	0437
0030	0344	34769	756	2768	14647	0013	00002	0424
0050	0354	34810	747	2770	14655	0021	00005	0405
0075	0358	34824	743	2771	14661	0031	00012	0400
0100	0360	34866		2774	14666	0041	00021	0373
0125	0360	3488 B		2775	14671	0051	00031	0367
0150	0360	34874		2775	14675	0060	00045	0371
0175	0359	34876		2775	14678	0069	00060	0370
0200	0358	34878		2775	14682	0079	00078	0370
0225	0357	34879		2776	14686	0088	00099	0371
*0250	0357	34881		2776	14690	0097	00122	0372
0300	0357	34882		2776	14698	0116	00175	0375
0400	0358	34883		2776	14715	0155	00313	0384
0500	0356	34879		2776	14731	0194	00496	0394
0600	0357	34884		2776	14748	0234	00723	0400
0700	0357	34887		2776	14764	0275	00996	0406

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0356	34888		2776	14781	0316	01316	0413
1000	0354	34893	673	2777	14813	0401	02102	0424
1200	0351	34899	665	2778	14846	0488	03085	0432
1500	0337	34906	650	2780	14890	0619	04917	0433

C-REF-NO 003	YR 1963	DEPTH 3160	WAVES 1 00X0	AIR T 03.0	VIS 98
CONS. NO 003	MONTH 5	MXSAMPD 30	WAVES 2 49X2	WET B 00.4	STN
LAT 58-135N	DAY 26	NO.DPTH 20	WND-DIR CALM	WW-CODE 02	
LON 57-040W	HR 22.2	W-COLOR	WND-SPD 00	CLD-TPE 7	
MARSD SQ 186		W-TRNSP	BARO 1016.5	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
222	0000	0430 B	34884	738	2768	14680	082			009	818
222	0010	0408	34857	739	2769	14672	067			008	822
222	0020	0408	34868	741	2769	14674	072			008	821
222	0030	0410	34866	738	2769	14676	076			008	822
222	0050	0408	34864	734	2769	14678	077			007	821
222	0075	0409	34870	736	2769	14683	079			008	821
222	0100	0410	34870	730	2769	14688	081			008	820
222	0149	0412	34885		2770	14697					
222	0198	0392	34881		2772	14696					
222	0297	0373	34879		2774	14704					
222	0396	0372	34888		2775	14721					
222	0495	0360	34895		2777	14732					
209	0596	0360	34883		2776	14748					
209	0794	0358	34886		2776	14781					
209	0992	0354	34874		2775	14812					
209	1191	0346	34878		2777	14842					
209	1490	0343	34880	696	2777	14891	107			012	814
209	1990	0338	34922	669	2781	14974	110			014	810
209	2490	0289	34928	664	2786	15038	107			016	810
209	2988	0188	34889	695	2791	15080	102			013	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0430 B	34884	738	2768	14680	0000	00000	0419
0010	0408	34857	739	2769	14672	0004	00000	0418
0020	0408	34868	741	2769	14674	0008	00001	0411
0030	0410	34866	738	2769	14676	0013	00002	0415
0050	0408	34864	734	2769	14678	0021	00005	0417
0075	0409	34870	736	2769	14683	0031	00012	0416
0100	0410	34870	730	2769	14688	0042	00022	0420
0125	0412	34878		2770	14693	0053	00034	0419
0150	0412	34885		2770	14697	0063	00049	0415
0175	0402	34884		2771	14697	0073	00066	0409
0200	0391	34881		2772	14696	0084	00086	0402
0225	0385	34880		2773	14698	0094	00108	0398
*0250	0379	34879		2773	14699	0104	00132	0396
0300	0373	34879		2774	14705	0124	00189	0394
0400	0372	34888		2775	14721	0164	00332	0394

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0360	34895		2776	14733	.0203	00514	0386
0600	0360	34883		2776	14749	0243	00741	0404
0700	0359	34883		2776	14765	0284	01017	0411
0800	0358	34886		2776	14782	0326	01341	0417
1000	0354	34874		2775	14813	0413	02144	0437
1200	0346	34878		2777	14843	0502	03154	0441
1500	0343	34881	695	2777	14893	0639	05067	0460
2000	0337	34923	669	2781	14975	0872	09289	0460
2500	0286	34926	667	2786	15039	1097	14472	0420
3000	0185	34888	696	2791	15081	1288	19848	0329

C-REF-NO 003	YR 1963	DEPTH 3224	WAVES 1 12X1	AIR T 01.3	VIS 97
CONS. NO 004	MONTH 5	MXSAMPC 31	WAVES 2 12X2	WET B 00.0	STN
LAT 58-470N	DAY 27	NO.DPTH 21	WND-DIR 120	WW-CODE 71	
LON 55-080W	HR 06.7	W-COLOR	WND-SPD 05	CLD-TPE 6	
MARSD SQ 186		W-TRNSP	BARO 1013.3	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
067	0000	0390 B	34799	742	2766	14662	091	009	094	011	813
067	0010	0372	34755	753	2764	14655	077	009	103	010	819
067	0020	0374	34758	751	2764	14658	079	010	107	011	819
067	0030	0376	34762	775	2764	14660	080	009	104	010	821
067	0050	0362	34782	740	2767	14658	088	010	108	010	818
067	0075	0345	34814	695	2772	14655	099	TRC	143	012	817
067	0100	0339	34827	695	2773	14657	106	TRC	143	012	816
067	0150	0318	34808		2774	14656					
067	0200	0321	34818		2774	14666					
067	0300	0323	34813		2774	14683					
067	0400	0336	34854		2776	14705					
067	0500	0334	34866		2777	14721					
055	0600	0332	34872		2777	14737					
055	0800	0332	34869		2777	14770					
055	1000	0332	34871		2777	14804					
055	1200	0332	34876		2778	14837					
055	1500	0331	34872		2778	14887					
055	2000	0342	34909	676	2779	14977	113	TRC		014	812
055	2500	0304	34919	658	2784	15046	116			016	812
055	3000	0235	34919	680	2790	15103	107			016	811
055	3100	0209	34887	690	2790	15109	105			014	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0390 B	34799	742	2766	14662	0000	00000	0443
0010	0372	34755	753	2764	14655	0005	00000	0460
0020	0374	34758	751	2764	14658	0009	00001	0460
0030	0376	34762	775	2764	14660	0014	00002	0460
0050	0362	34782	740	2767	14658	0023	00006	0433
0075	0345	34814	695	2772	14655	0033	00012	0395
0100	0339	34827	695	2773	14657	0043	00021	0382
0125	0328	3482 B		2774	14656	0053	00032	0379
0150	0318	34808		2774	14656	0062	00046	0381
0175	0318	34812		2774	14660	0072	00062	0380
0200	0321	34818		2774	14666	0081	00080	0380
0225	0321	34816		2774	14670	0091	00101	0383
0250	0322	34815		2774	14674	0101	00125	0387
0300	0323	34813		2774	14683	0120	00181	0393
0400	0336	34854		2776	14705	0160	00322	0384

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0334	34866		2777	14721	.0198	00500	0381
0600	0332	34872		2777	14737	0237	00719	0382
0700	0332	34871		2777	14754	0276	00980	0390
0800	0332	34869		2777	14770	0316	01289	0400
1000	0332	34871		2777	14804	0398	02056	0415
1200	0332	34876		2778	14837	0484	03023	0426
1500	0331	34872		2778	14887	0617	04887	0451
2000	0342	34909	676	2779	14977	0853	09157	0476
2500	0304	34919	658	2784	15047	1089	14628	0451
3000	0235	34919	680	2790	15103	1301	20603	0379

C-REF-NO 003	YR 1963	DEPTH 3320	WAVES 1 12X1	AIR T 02.2	VIS 98
CONS. NO 005	MONTH 5	MXSAMPD 32	WAVES 2 12X2	WET B 00.0	STN
LAT 59-250N	DAY 27	NO.DPTH 21	WND-DIR 310	WW-CODE 15	
LON 53-092W	HR 15.6	W-COLOR	WND-SPD 04	CLD-TPE 7	
MARSD SQ 186		W-TRNSP	BARU 1013.2	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
156	0000	0450 B	34880	725	2766	14688	104				010	821
156	0010	0415	34855	685	2768	14675	076				009	819
156	0020	0406	34845	708	2768	14672	084				009	820
156	0029	0408	34850	696	2768	14675	090				008	820
156	0049	0406	34861	691	2769	14677	089				007	817
156	0074	0406	34858	712	2769	14681	095				008	818
156	0098	0405	34869	637	2770	14685	099				009	820
156	0147	0383	34859		2771	14684						
156	0196	0373	34869		2773	14688						
156	0294	0363	34876		2775	14700						
156	0393	0356	34883		2776	14713						
156	0491	0354	34897		2777	14729						
143	0593	0347	34902		2778	14743						
143	0792	0342	34891		2778	14773						
143	0988	0334	34880		2778	14803						
143	1186	0332	34876		2778	14835						
143	1484	0333	34880		2778	14885						
143	1982	0346	34924	602	2780	14976	120				015	805
143	2482	0310	34932	600	2784	15046	124				012	809
143	2981	0260	34924	635	2788	15111	116				015	811
143	3180	0225	34911	642	2790	15130	111				014	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0450 B	34880	725	2766	14688	0000	00000	0443
0010	0415	34855	685	2768	14675	0004	00000	0427
0020	0406	34845	708	2768	14672	0009	00001	0426
0030	0408	34851	695	2768	14675	0013	00002	0425
0050	0406	34861	693	2769	14678	0021	00005	0417
0075	0406	34858	710	2769	14682	0032	00012	0422
0100	0404	34869		2770	14685	0043	00022	0414
0125	0394	34865		2771	14685	0053	00034	0409
0150	0382	34859		2771	14684	0063	00048	0404
0175	0376	34864		2772	14686	0073	00065	0397
0200	0372	34869		2773	14688	0083	00084	0391
0225	0369	34872		2774	14691	0093	00106	0388
*0250	0366	34874		2774	14694	0103	00130	0387
0300	0362	34876		2775	14701	0122	00185	0385
0400	0356	34884		2776	14714	0161	00324	0381

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0353	34898		2777	14730	0199	00501	0377
0600	0347	34902		2778	14744	0237	00717	0376
0700	0344	34898		2778	14759	0276	00974	0384
0800	0342	34890		2778	14775	0315	01278	0395
1000	0334	34880		2778	14805	0397	02035	0410
1200	0332	34876		2778	14837	0482	02998	0426
1500	0334	34881		2778	14889	0615	04854	0448
2000	0345	34925	602	2780	14979	0847	09075	0469
2500	0309	34932	601	2784	15049	1081	14491	0448
3000	0254	34921	631	2789	15111	1299	20658	0405

C-REF-NO 003	YR 1963	DEPTH 3284	WAVES 1 28XX	AIR T 01.5	VIS 94
CONS. NO 006	MONTH 5	MXSAMP 32	WAVES 2 28X4	WET B -01.2	STN
LAT 60-00N	DAY 28	NO.DPTH 21	WND-DIR 280	WW-CODE 75	
LON 51-150W	HR 01.4	W-COLOR	WND-SPD 12	CLD-TPE 8	
MARSD SQ 222		W-TRNSP	BARO 1016.3	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PD4	-P-	NO2	NO3	SIO	PH
014	0000	0410 B	34742	549	2759	14669	056				008	818
014	0010	0412	34727	484	2758	14672	057				010	817
014	0020	0421	34772	597	2760	14678	053				009	817
014	0030	0436	34825	643	2763	14686	054				008	815
014	0050	0420	34836	554	2766	14683	077				007	818
014	0074	0422	34851	651	2767	14688	088				007	814
014	0099	0420	34863	529	2768	14691	082				008	811
014	0149	0392	34888		2773	14688						
014	0198	0395	34918		2775	14698						
014	0297	0362	34893		2776	14700						
014	0397	0349	34881		2776	14711						
014	0496	0343	34884		2777	14725						
000	0584	0344	34890		2778	14740						
000	0780	0348	34900		2778	14774						
000	0977	0339	34892		2778	14803						
000	1174	0334	34887		2778	14834						
000	1478	0335	34890		2779	14885						
000	1972	0345	34940	628	2782	14974	115				014	802
000	2472	0301	34937	614	2786	15040	114				015	803
000	2772	0273	34945	590	2789	15080	115				016	807
000	3172	0198	34922	659	2793	15117	107				014	805

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0410 B	34742	549	2759	14669	0000	00000	0506
0010	0412	34727	484	2758	14672	0005	00000	0520
0020	0421	34772	597	2760	14678	0010	00001	0496
0030	0436	34825	643	2763	14686	0015	00002	0473
0050	0420	34836	554	2766	14683	0024	00006	0450
0075	0422	34852	648	2767	14688	0036	00013	0443
0100	0419	34863		2768	14691	0047	00023	0434
0125	0405 B	34876		2770	14690	0057	00036	0413
0150	0392	34889		2773	14688	0068	00050	0392
0175	0393	34905		2774	14693	0077	00066	0382
0200	0394	34918		2775	14698	0087	00085	0377
0225	0388 B	3492 B		2775	14699	0096	00105	0374
*0250	0380 B	3491 B		2776	14700	0106	00128	0372
0300	0361	34892		2776	14700	0125	00181	0372
0400	0349	34881		2777	14711	0162	00318	0376

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0500	0343	34884		2777	14725	0200	00494	0376
0600	0345	34891		2778	14743	0239	00710	0381
0700	0347	34897		2778	14760	0278	00971	0388
0800	0347	34900		2778	14777	0317	01276	0395
1000	0338	34891		2778	14807	0398	02030	0407
1200	0334	34887		2778	14838	0482	02982	0421
1500	0336	34892		2779	14890	0614	04815	0442
2000	0343	34940	628	2782	14978	0842	08942	0455
2500	0299	34938	611	2786	15045	1067	14164	0430
3000	0231	34930	632	2791	15102	1270	19885	0364

C-REF-NO 003	YR 1963	DEPTH 3036	WAVES 1 29XX	AIR T 00.1	VIS 97
CONS. NO 007	MONTH 5	MXSAMPC 29	WAVES 2 28XX	WET B -01.1	STN
LAT 60-290N	DAY 28	NO.DPTH 20	WND-DIR 300	WW-CODE 01	
LON 50-248W	HR 06.8	W-COLOR	WND-SPD 09	CLD-TPE 6	
MARSD SQ 222		W-TRNSP	BARO 1016.8	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
068	0000	0420 B	34921	750	2772	14676	084			006	818
068	0010	0410	34819	721	2765	14672	068			006	820
068	0020	0410	34870	692	2769	14674	068			006	818
068	0030	0412	34843	657	2767	14677	067			005	820
068	0050	0402	34865	662	2770	14676	072			005	821
068	0075	0398	34874	727	2771	14678	072			006	820
068	0099	0390	34890	738	2773	14679	079			007	817
068	0148	0377	34892		2775	14682					
068	0198	0368	34893		2776	14686					
068	0297	0356	34902		2777	14698					
068	0396	0352	34898		2778	14712					
068	0495	0343	34892		2778	14725					
056	0580	0340	34894		2778	14737					
056	0775	0334	34890		2779	14767					
056	0972	0333	34886		2778	14800					
056	1169	0334	34885		2778	14833					
056	1464	0348	34916	670	2779	14889	109			014	812
056	1957	0322	34919	660	2782	14961	107			014	810
056	2455	0282	34940	663	2788	15029	104			016	811
056	2950	0180	34896	693	2793	15070	095			012	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0420 B	34921	750	2772	14676	0000	00000	0381
0010	0410	34819	721	2765	14672	0004	00000	0449
0020	0410	34870	692	2769	14674	0009	00001	0411
0030	0412	34843	657	2767	14677	0013	00002	0435
0050	0402	34865	662	2770	14676	0021	00005	0410
0075	0398	34874	727	2771	14678	0032	00012	0402
0100	0390	34890		2773	14679	0041	00021	0384
0125	0383	34894		2774	14680	0051	00032	0376
0150	0377	34892		2775	14682	0060	00045	0374
0175	0372	34892		2775	14684	0070	00061	0371
0200	0368	34893		2776	14686	0079	00079	0369
0225	0364	34896		2776	14689	0088	00099	0365
*0250	0361	34898		2777	14692	0098	00122	0363
0300	0356	34902		2777	14698	0116	00173	0359
0400	0352	34898		2778	14713	0153	00305	0367
0500	0343	34892		2778	14725	0190	00478	0370

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0339	34894		2778	14741	0227	00691	0374
0700	0336	34892		2779	14756	0265	00946	0379
0800	0334	34889		2779	14771	0304	01245	0387
1000	0333	34885		2778	14804	0384	01990	0405
1200	0336	34888		2778	14839	0468	02942	0422
1500	0347	34917	669	2780	14895	0599	04769	0439
2000	0320	34922	659	2783	14968	0822	08786	0437
2500	0267 C	3492 C	667	2788	15031	1033	13679	0394

C-REF-NO 003	YR 1963	DEPTH 2852	WAVES 1 29X4	AIR T 05.2	VIS 91
CONS. NO 008	MONTH 5	MXSAMPC 28	WAVES 2 29X5	WET B 00.3	STN
LAT 60-378N	DAY 28	NO.DPTH 20	WND-DIR 290	WW-CODE 75	
LON 50-015W	HR 11.5	W-COLOR	WND-SPD 10	CLD-TPE 8	
MARSD SQ 222		W-TRNSP	BARO 1016.1	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
115	0000	0350 B	34431	351	2741	14640	059			008	819
115	0010	0337	34395	383	2739	14635	043			009	824
115	0020	0342	34411	376	2740	14639	043			007	825
115	0030	0352	34710	648	2763	14649	051			005	825
115	0049	0413	34960	467	2776	14682	094			009	821
115	0074	0483	34970	280	2769	14715	100			010	816
115	0099	0476	34970	392	2770	14716	101			010	815
115	0148	0468	34966		2771	14721					
115	0198	0452	34960		2772	14722					
115	0297	0442	34952		2772	14734					
115	0396	0428	34940		2773	14745					
115	0495	0414	34937		2774	14755					
105	0582	0398	34921		2775	14763					
105	0783	0380	34929		2777	14789					
105	0970	0366	34927		2778	14814					
105	1167	0354	34929		2780	14842					
105	1463	0350	34943	532	2781	14890	113			013	813
105	1962	0312	34946	384	2785	14958	108			014	811
105	2362	0271	34944	432	2789	15009	109			015	811
105	2762	0212	34929	481	2793	15052	107			014	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0350 B	34431	351	2741	14640	0000	00000	0682
0010	0337	34395	383	2739	14635	0007	00000	0698
0020	0342	34411	376	2740	14639	0014	00001	0691
0030	0352	34710	648	2763	14649	0020	00003	0476
0050	0417	34964	456	2776	14683	0028	00006	0351
0075	0483	34970	282	2769	14715	0038	00013	0420
0100	0476	34970		2770	14716	0048	00022	0415
0125	0472	34968		2770	14719	0059	00034	0414
0150	0467	34966		2771	14721	0069	00049	0414
0175	0459	34963		2771	14722	0080	00066	0411
0200	0452	34960		2772	14723	0090	00086	0407
0225	0448	34958		2772	14725	0100	00109	0407
*0250	0445	34956		2772	14728	0111	00134	0409
0300	0442	34952		2772	14735	0131	00192	0413
0400	0427	34940		2773	14745	0173	00343	0417
0500	0413	34936		2774	14756	0215	00537	0414

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0396	34921		2775	14765	0257	00775	0415
0700	0386	34923		2776	14777	0299	01054	0412
0800	0379	34929		2777	14791	0340	01375	0408
1000	0364	34927		2779	14818	0423	02143	0410
1200	0353	34930		2780	14847	0507	03087	0412
1500	0348	34944	519	2782	14895	0633	04852	0420
2000	0309	34946	385	2786	14963	0843	08622	0404
2500	0251	34939	423 C	2790	15024	1038	13129	0362

C-REF-NO 003	YR 1963	DEPTH 826	WAVES 1 33X4	AIR T 05.2	VIS 98
CONS. NO 009	MONTH 5	MXSAMPE 08	WAVES 2 26X4	WET B 00.3	STN
LAT 60-500N	DAY 28	NO.DPTH 14	WND-DIR 330	WW-CODE 15	
LON 49-24CW	HR 14.9	W-COLOR	WND-SPD 07	CLD-TPE 8	
MARSD SQ 221		W-TRNSP	BARO 1017.2	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PU4	-P-	NO2	NO3	SIO	PH
149	0000	-0004 B	33224	823	2670	14466	014			TRC	003	830
149	0010	-0031	33226	834	2671	14456	TRC		TRC	TRC	004	828
149	0020	-0024	33295	569	2676	14462	TRC		003	TRC	003	830
149	0030	-0002	33477	463	2690	14476	050		007	052	004	825
149	0050	0090	33940	647	2722	14527	083		010	110	008	814
149	0075	0124		588			089		012	116	008	817
149	0100	0158	34120	765	2732	14568	086		014	115	008	815
149	0149	0216	34281		2741	14604						
149	0199	0302	34500		2751	14653						
145	0296	0424	34802		2762	14725						
145	0395	0472	34916	678	2766	14763	097		012	141	010	811
145	0493	0482	34948	707	2768	14783	101		010	145	010	805
145	0592	0487	34969	700	2769	14802	108		007	140	010	812
145	0790	0437	34952	697	2773	14814	108		006	141	011	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0004 B	33224	823	2670	14466	0000	00000	1354
0010	-0031	33226	834	2671	14456	0014	00001	1340
0020	-0024	33295	569	2676	14462	0027	00003	1290
0030	-0002	33477	463	2690	14476	0039	00006	1161
0050	0090	33940	647	2722	14527	0059	00014	0857
0075	0124	3412 I	588	2734	14549	0080	00027	0743
0100	0158	34120	765	2732	14568	0099	00044	0766
0125	0187	34200		2736	14586	0117	00065	0727
0150	0218	34285		2741	14605	0135	00091	0688
0175	0260	3439 B		2746	14629	0152	00119	0642
0200	0304	34504		2751	14654	0168	00149	0600
0225	0341	34598		2755	14675	0182	00181	0566
*0250	0374	34681		2758	14695	0196	00215	0539
0300	0427	34809		2763	14727	0223	00289	0503
0400	0473	34919	680	2766	14764	0273	00468	0484
0500	0483	34950	707	2768	14785	0322	00694	0484
0600	0483 B	34968	710 B	2769	14802	0370	00971	0482
0700	0465	34967	709	2771	14811	0419	01293	0473
*0800	0433	34949	695	2773	14814	0466	01656	0457

C-REF-NO 003 YR 1963 DEPTH 115 WAVES 1 18X5 AIR T 04.4 VIS 99
 CONS. NO 010 MONTH 5 MXSAMPD 01 WAVES 2 18X5 WET B 02.2 STN
 LAT 60-490N DAY 28 NO.DPTH 7 WND-DIR 280 WW-CODE 01
 LON 48-345W HR 18.0 W-COLOR WND-SPD 07 CLD-TPE 3
 MARSD SQ 221 W-TRNSP BARO 1017.2 CLD-AMT 2 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
180	0000	0010 B	33014	939	2652	14470	018				002	836
180	0010	-0030	32961	906	2650	14452	TRC				002	836
180	0020	-0089	32978	893	2653	14427	TRC				002	835
180	0030	-0099	32992	874	2655	14424	012				002	834
180	0050	-0076	33174	726	2669	14441	076				007	830
180	0075	0034	33744	692	2710	14503	033				002	822
180	0100	0065	33853	700	2717	14523	085				008	820

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0010 B	33014	939	2652	14470	0000	00000	1520
0010	-0030	32961	906	2650	14452	0015	00001	1543
0020	-0089	32978	893	2653	14427	0031	00003	1508
0030	-0099	32992	874	2655	14424	0046	00007	1494
0050	-0076	33174	726	2669	14441	0075	00019	1361
0075	0034	33744	692	2710	14503	0104	00037	0974
0100	0065	33853	700	2717	14523	0128	00058	0908

C-REF-NO 003	YR 1963	DEPTH 84	WAVES 1 35X1	AIR T -00.6	VIS 98
CONS. NO 011	MONTH 5	MXSAMPD 01	WAVES 2 35X1	WET B -01.7	STN
LAT 61-570N	DAY 29	NO.DPTH 6	WND-DIR 340	WW-CODE 85	
LON 50-020W	HR 06.6	W-COLOR	WND-SPD 10	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1020.1	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
066	0000	0115 B	33208	862	2662	14520	021			002	836
066	0010	0086	33151	874	2659	14508	TRC			002	838
066	0020	0083	33157	897	2660	14508	TRC			002	837
066	0030	0064	33155	876	2661	14501	TRC			001	841
066	0050	0021	33225	866	2669	14486	018			002	834
066	0075	0020	33421	811	2684	14493	047			004	829

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0115 B	33208	862	2662	14520	0000	00000	1428
0010	0086	33151	874	2659	14508	0015	00001	1455
0020	0083	33157	897	2660	14508	0029	00003	1448
0030	0064	33155	876	2661	14501	0044	00007	1439
0050	0021	33225	866	2669	14486	0072	00018	1363
0075	0020	33421	811	2684	14493	0104	00039	1213

C-REF-NO 003 YR 1963 DEPTH 240 WAVES 1 32X3 AIR T -01.2 VIS 99
 CONS. NO 012 MONTH 5 MXSAMPD 02 WAVES 2 32X3 WET B -02.8 STN
 LAT 61-509N DAY 29 NO.DPTH 9 WND-DIR 320 WW-CODE 01
 LON 50-365W HR 09.0 W-COLOR WND-SPD 15 CLD-TPE 7
 MARSD SQ 222 W-TRNSP BARO 1024.0 CLD-AMT 4 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
090	0000	-0033 B	33053	977	2657	14451	011					839
090	0010	-0042	33035	1021	2656	14448	TRC					843
090	0019	-0064	33021	935	2656	14439	014					839
090	0029	-0054	33293	861	2677	14449	041					829
090	0048	0044	33716	802	2707	14503	066					825
090	0072	0109	33901	806	2718	14539	074					822
090	0096	0114	33933	782	2720	14546	078					822
090	0145	0138	34041	771	2727	14566	083					823
090	0193	0169	34122	765	2731	14589	081					822

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0033 B	33053	977	2657	14451	0000	00000	1472
0010	-0042	33035	1021	2656	14448	0015	00001	1482
0020	-0064	3304 B	926	2658	14439	0030	00003	1467
0030	-0050	33320	856	2679	14452	0043	00007	1260
0050	0052	33742	801	2709	14507	0066	00016	0986
0075	0111	33909	803	2718	14541	0090	00031	0894
0100	0115	33941	780	2721	14547	0112	00051	0872
0125	0127	33995	772	2724	14557	0134	00075	0839
0150	0139	3404 C	763	2727	14567	0154	00105	0816
0175	0155	3409 B	762	2730	14579	0175	00139	0792

C-REF-NO 003	YR 1963	DEPTH 2630	WAVES 1 34X3	AIR T 00.0	VIS 98
CONS. NO 013	MONTH 5	MXSAMPD 25	WAVES 2 34X5	WET B -02.2	STN
LAT 61-458N	DAY 29	NO.DPTH 19	WND-DIR 340	WW-CODE 02	
LON 51-100W	HR 13.4	W-COLOR	WND-SPD 16	CLD-TPE 3	
MARSD SQ 222		W-TRNSP	BARO 1026.2	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
134	0000	0180 B	33803	929	2705	14557	010			002	835
134	0010	0169	33764	922	2703	14554	016			004	834
134	0020	0326	34367	828	2738	14632	025			005	827
134	0030	0346	34516	789	2748	14644	032			004	824
134	0049	0372	34655	772	2756	14660	024			004	820
134	0073	0402	34760	742	2761	14678	017			007	817
134	0096	0428	34864	704	2767	14694	059			009	813
134	0145	0443	34924		2770	14709					
134	0193	0448	34940		2771	14720					
134	0291	0438	34942		2772	14732					
134	0390	0428	34928		2772	14744					
134	0490	0415	34922		2773	14755					
123	0596	0400	34922		2775	14766					
123	0795	0378	34910		2776	14789					
123	0994	0360	34900		2777	14815	097			010	
123	1193	0346	34892	673	2778	14842	108			012	807
123	1492	0336	34887	706	2778	14888	112			012	802
123	1990	0325	34935	653	2783	14968	108			014	807
123	2538	0267	34927	663	2788	15037	111			015	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0180 B	33803	929	2705	14557	0000	00000	1019
0010	0169	33764	922	2703	14554	0010	00001	1041
0020	0326	34367	828	2738	14632	0019	00002	0710
0030	0346	34516	789	2748	14644	0026	00004	0617
0050	0373	34660	771	2757	14661	0038	00008	0536
0075	0405	34770	739	2762	14680	0050	00016	0487
0100	0430	34874	704 B	2767	14696	0062	00027	0438
0125	0441	3492 C		2770	14705	0073	00039	0420
0150	0444	34927		2770	14711	0083	00054	0418
0175	0447	34937		2771	14716	0094	00072	0416
0200	0448	34941		2771	14721	0104	00092	0417
0225	0446	34944		2771	14724	0115	00115	0416
*0250	0444	34945		2772	14727	0125	00141	0415
0300	0437	34941		2772	14733	0146	00200	0416
0400	0427	34927		2772	14745	0189	00353	0425
0500	0414	34922		2773	14756	0232	00552	0425
0600	0399	34922		2775	14766	0275	00793	0419

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0700	0388	34917		2775	14778	0317	01076	0419
0800	0377	34910		2776	14790	0359	01404	0421
1000	0360	34900		2777	14816	0445	02199	0425
1200	0346	34892	674	2778	14843	0532	03183	0431
1500	0336	34888	70.5	2778	14890	0665	05044	0446
2000	0317 C	3492 E	684 D	2782	14966	0890	09090	0437
2500	02.71	34926	665	2787	15033	1103	14015	0399

C-REF-NO 003 YR 1963 DEPTH 2870 WAVES 1 31X3 AIR T 05.6 VIS 93
 CONS. NO 014 MONTH 5 MXSAMPD 27 WAVES 2 31X4 WET B 02.2 STN
 LAT 61-405N DAY 29 NO.DPTH 20 WND-DIR 320 WW-CODE 03
 LON 51-450W HR 17.8 W-COLOR WND-SPD 12 CLD-TPE 8
 MARSD SQ 222 W-TRNSP BARO 1030.1 CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
178	0000	0320 B	34484	822 B	2748	14628	033			003	823
178	0010	0330	34506	855	2748	14634	033			003	825
178	0020	0330	34497	803	2748	14635	034			003	828
178	0030	0367	34640	761	2756	14655	058			004	824
178	0050	0393	34744	706	2761	14670	075			006	820
178	0075	0412	34801	810	2764	14683	074			006	819
178	0099	0422	34872	726	2768	14692	083			007	816
178	0149	0448	34940		2771	14712					
178	0198	0452	34958		2772	14722					
178	0297	0436	34950		2773	14732					
178	0396	0428	34953		2774	14745					
178	0496	0412	34945		2775	14755					
168	0535	0413	34949		2775	14762					
168	0718	0401	34944		2776	14787					
168	0906	0366	34913		2777	14803					
168	1100	0362	34907		2777	14834					
168	1393	0341	34908	690	2779	14874	108			012	813
168	1881	0338	34935	660	2782	14955	109			014	809
168	2370	0291	34938	664	2787	15019	108			014	807
168	2662	0241	34931	668	2790	15047	108			016	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0320 B	34484	822 B	2748	14628	0000	00000	0615
0010	0330	34506	855	2748	14634	0006	00000	0608
0020	0330	34497	803	2748	14635	0012	00001	0616
0030	0367	34640	761	2756	14655	0018	00003	0543
0050	0393	34744	706	2761	14670	0029	00007	0492
0075	0412	34801	810	2764	14683	0041	00015	0471
0100	0423	34874		2768	14693	0052	00025	0429
0125	0436	34917		2770	14703	0063	00037	0414
0150	0448	34941		2771	14713	0073	00052	0412
0175	0452	34953		2771	14719	0084	00069	0409
0200	0452	34958		2772	14723	0094	00089	0409
0225	0449	34958		2772	14726	0104	00112	0408
*0250	0445	34957		2772	14728	0114	00137	0408
0300	0436	34950		2773	14732	0135	00195	0408
0400	0427	34953		2774	14745	0176	00343	0407
0500	0412	34945		2775	14755	0217	00533	0406

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0412	34951		2776	14772	0258	00767	0411
0700	0403	34946		2776	14785	0300	01046	0415
0800	0385	34931		2777	14794	0342	01370	0415
1000	0363	34908		2777	14817	0427	02157	0423
1200	0355	34906		2778	14847	0514	03139	0432
1500	0341 B	34914	682	2780	14892	0645	04970	0432
2000	0331	34938	659	2783	14973	0867	08978	0440
2500	C271	34936	663	2788	15033	1078	13863	0391

C-REF-NO 003	YR 1963	DEPTH 2953	WAVES 1 30X3	AIR T 00.8	VIS 93
CONS. NO 015	MONTH 5	MXSAMPC 29	WAVES 2 30X3	WET B -02.2	STN
LAT 61-350N	DAY 29	NO.DPTH 20	WND-DIR 300	WW-CODE 03	
LON 52-300W	HR 22.1	W-COLOR	WND-SPD 07	CLD-TPE X	
MARSD SQ 222		W-TRNSP	BARO 1031.2	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
224	0000	0305 B	34449	857	2746	14621	011			004	835
224	0010	0300	34421	870	2745	14620	TRC			004	833
224	0020	0300	34419	860	2744	14622	011			004	833
224	0030	0302	34409	854	2743	14624	018			002	835
224	0050	0361	34643	738	2756	14656	091			009	821
224	0075	0407	34766	718	2761	14681	095			010	817
224	0100	0446	34867	707	2765	14703	097			010	816
224	0150	0476	34935		2767	14724					
224	0199	0476	34947		2768	14732					
224	0299	0472	34960		2770	14747					
224	0399	0458	34951		2771	14758					
224	0498	0443	34948		2772	14768					
215	0591	0420	34929		2773	14773					
215	0788	0388	34912		2775	14793					
215	0984	0368	34903		2776	14817					
215	1181	0353	34898		2777	14843					
215	1476	0345	34897	694	2778	14889	108			012	810
215	1969	0328	34928	663	2782	14966	110			014	809
215	2462	0283	34931	671	2787	15031	109			015	809
215	2857		34922	672			105			016	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0305 B	34449	857	2746	14621	0000	00000	0628
0010	0300	34421	870	2745	14620	0006	00000	0646
0020	0300	34419	860	2744	14622	0013	00001	0648
0030	0302	34409	854	2743	14624	0020	00003	0658
0050	0361	34643	738	2756	14656	0032	00008	0537
0075	0407	34766	718	2761	14681	0045	00016	0492
0100	0446	34867	707	2765	14703	0057	00027	0459
0125	0467	3492 B		2767	14716	0068	00040	0448
0150	0476	34935		2767	14724	0079	00056	0447
0175	0478	34945		2768	14729	0091	00075	0445
0200	0476	34947		2768	14733	0102	00096	0444
0225	0476	34952		2769	14737	0113	00121	0442
*0250	0475	34956		2769	14740	0124	00148	0442
0300	0472	34960		2770	14747	0146	00211	0441
0400	0458	34951		2771	14758	0191	00372	0443
0500	0443	34948		2772	14768	0235	00578	0439

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0418	34928		2773	14774	0280	00828	0436
0700	0400	34917		2774	14783	0324	01121	0433
0800	0387	34911		2775	14794	0367	01458	0431
1000	0367	34902		2776	14819	0454	02267	0431
1200	0352	34898		2777	14846	0542	03262	0435
1500	0345	34898	692	2778	14893	0677	05137	0449
2000	0322	34929	663	2783	14969	0901	09183	0435
2500		34932	665					

C-REF-NO 003 YR 1963 DEPTH 2939 WAVES 1 00X0 AIR T 02.5 VIS 98
 CONS. NO 016 MONTH 5 MXSAMPD 29 WAVES 2 00X0 WET B 00.0 STN
 LAT 61-260N DAY 30 NO.DPTH 20 WND-DIR CALM WW-CODE 03
 LON 53-302W HR 02.8 W-COLOR WND-SPD 00 CLD-TPE X
 MARSD SQ 222 W-TRNSP BARO 1031.1 CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
028	0000	0350 B	34517	827	2747	14641	025			003	822
028	0010	0336	34512	817	2748	14637	025			008	826
028	0020	0362	34586	779	2752	14650	039			004	823
028	0030	0382	34656	772	2755	14661	055			004	820
028	0050	0399	34731	746	2759	14673	063			005	820
028	0075	0422	34836	714	2765	14688	086			008	816
028	0100	0422	34872	680	2768	14693	107			009	814
028	0150	0430	34906		2770	14705					
028	0200	0438	34925		2771	14716					
028	0299	0439	34948		2772	14733					
028	0398	0432	34943		2773	14747					
028	0498	0417	34932		2774	14757					
019	0599	0406	34922		2774	14769					
019	0798	0384	34918		2776	14793					
019	0997	0366	34905		2777	14818					
019	1196	0350	34894	629	2777	14844					
019	1494	0353	34913	647	2779	14896	114			013	809
019	1994	0327	34934	616	2783	14970	113			014	808
019	2492	0281	34935	641	2787	15035	108			015	807
019	2890	0216	34908	663	2791	15076	105			015	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0350 B	34517	827	2747	14641	0000	00000	0617
0010	0336	34512	817	2748	14637	0006	00000	0609
0020	0362	34586	779	2752	14650	0012	00001	0578
0030	0382	34656	772	2755	14661	0018	00003	0546
0050	0399	34731	746	2759	14673	0028	00007	0508
0075	0422	34836	714	2765	14688	0041	00015	0455
0100	0422	34872	680	2768	14693	0052	00025	0430
0125	0425	34893		2770	14698	0062	00037	0421
0150	0430	34906		2770	14705	0073	00052	0419
0175	0434	34917		2770	14711	0084	00070	0418
0200	0438	34925		2771	14716	0094	00090	0418
0225	0440	34933		2771	14721	0105	00113	0417
0250	0440	34940		2772	14726	0115	00139	0415
0300	0439	34948		2772	14734	0136	00198	0413
0400	0432	34943		2773	14747	0178	00349	0419
0500	0417	34932		2774	14757	0221	00546	0421

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0406	34922		2774	14769	0263	00788	0426
0700	0395	34919		2775	14781	0306	01076	0425
0800	0384	34918		2776	14793	0349	01406	0422
1000	0366	34905		2777	14818	0435	02206	0429
1200	0350	34894	629	2777	14845	0523	03198	0435
1500	0353	34913	647	2779	14897	0657	05071	0448
2000	0327	34934	616	2783	14971	0882	09126	0437
2500	0277	34932	634	2787	15035	1096	14076	0403

C-REF-NO 003 YR 1963 DEPTH 2823 WAVES 1 18X1 AIR T 03.3 VIS 98
 CONS. NO 017 MONTH 5 MXSAMPD 28 WAVES 2 18X1 WET B 02.2 STN
 LAT 61-080N DAY 30 NO.DPTH 20 WND-DIR 180 WW-CODE 02
 LON 55-310W HR 09.8 W-COLOR WND-SPD 06 CLD-TPE X
 MARSD SQ 222 W-TRNSP BARO 1028.3 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
098	0000	0380 B	34751	797	2763	14657	048	011	041	005	824
098	0010	0361	34740	788	2764	14650	032	011	045	005	826
098	0020	0361	34741	786	2764	14652	035	010	050	006	828
098	0030	0364	34743	789	2764	14655	042	011	048	004	828
098	0050	0361	34745	788	2764	14657	042	011	058	004	829
098	0075	0394	34835	709	2768	14676	089	009	126	010	820
098	0100	0406	34865	696	2769	14686	098	008	134	010	815
098	0150	0413	34891		2771	14697					
098	0200	0390	34888		2773	14696					
098	0300	0384	34882		2773	14710					
098	0400	0388	34889		2773	14728					
098	0500	0384	34903		2775	14743					
090	0632	0383	34911		2775	14765					
090	0822	0364	34899		2776	14788					
090	1026	0354	34897		2777	14818					
090	1221	0344	34892		2778	14846					
090	1520	0344	34906	678	2779	14896	108			013	812
090	2016	0323	34932	664	2783	14972	108			014	808
090	2411	0284	34937	656	2787	15023	105			015	808
090	2806	0242	34930	666	2790	15073	105			016	808

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0380 B	34751	797	2763	14657	0000	00000	0469
0010	0361	34740	788	2764	14650	0005	00000	0460
0020	0361	34741	786	2764	14652	0009	00001	0461
0030	0364	34743	789	2764	14655	0014	00002	0463
0050	0361	34745	788	2764	14657	0023	00006	0460
0075	0394	34835	709	2768	14676	0034	00013	0427
0100	0406	34865	696	2769	14686	0045	00023	0419
0125	0413	34883		2770	14693	0056	00035	0415
0150	0413	34891		2771	14697	0066	00050	0412
0175	0403	34891		2772	14697	0076	00067	0403
0200	0390	34888		2773	14696	0086	00086	0395
0225	0386	34886		2773	14698	0096	00108	0395
0250	0383	34884		2773	14701	0106	00132	0396
0300	0384	34882		2773	14710	0127	00189	0403
0400	0388	34889		2773	14728	0168	00338	0412
0500	0384	34903		2775	14743	0209	00529	0406

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0600	0383	34910		2775	14759	0250	00762	0409
0700	0377	34908		2776	14773	0292	01040	0413
0800	0366	34901		2776	14785	0334	01364	0415
1000	0355	34897		2777	14814	0418	02150	0422
1200	0345	34892		2778	14843	0505	03129	0430
1500	0344	34905	631 B	2779	14893	0638	04982	0443
2000	0324	34931	664	2783	14970	0861	09009	0436
2500	0278	34937	659	2788	15036	1074	13936	0401

C-REF-NO 003	YR 1963	DEPTH 2835	WAVES 1 15X5	AIR T 03.3	VIS 95
CUNS. NO 018	MONTH 5	MXSAMPD 27	WAVES 2 22X2	WET B 02.2	STN
LAT 60-480N	DAY 30	NO.DPTH 20	WND-DIR 150	WW-CODE 60	
LON 57-300W	HR 17.0	W-COLOR	WND-SPD 15	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1015.6	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
170	0000	0350 B	34672	795	2760	14643	054			004	817
170	0009	0318	34551	801	2753	14629	028			004	828
170	0018	0318	34573	792	2755	14631	027			003	828
170	0028	0320	34560	774	2754	14633	041			002	829
170	0047	0319	34566	800	2754	14636	029			002	829
170	0070	0322	34596	793	2756	14642	037			003	829
170	0093	0362	34778	740	2767	14665	078			006	819
170	0140	0404	34879		2771	14692					
170	0186	0402	34897		2772	14699					
170	0279	0390	34892		2773	14709					
170	0372	0386	34898		2774	14723					
170	0464	0386	34900		2774	14738					
159	0531	0380	34914		2776	14747					
159	0714	0372	34912		2777	14774					
159	0904	0364	34908		2777	14802					
159	1094	0355	34899		2777	14829					
159	1385	0341	34899	680	2779	14872	109			012	809
159	1876	0325	34938	622	2783	14949	111			014	807
159	2372	0280	34935	565	2787	15014	108			015	808
159	2670	0232	34912	666	2790	15045	101			014	

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0350 B	34672	795	2760	14643	0000	00000	0500
0010	0317	34551	801	2753	14629	0005	00000	0563
0020	0318	34572	788	2755	14631	0011	00001	0549
0030	0320	34559	776	2754	14634	0017	00003	0560
0050	0318	34565	802	2754	14636	0028	00007	0556
0075	0330	3463 B	783	2759	14646	0041	00016	0517
0100	0371	3481 B		2768	14670	0053	00026	0428
0125	0396	3487 C		2771	14686	0064	00039	0407
0150	0405	34887		2771	14694	0074	00053	0407
0175	0405	34897		2772	14698	0084	00070	0401
0200	0400	34898		2773	14700	0094	00090	0399
0225	0397	34898		2773	14703	0104	00111	0398
*0250	0394	34896		2773	14706	0114	00136	0398
0300	0389	34893		2773	14712	0135	00193	0400
0400	0386	34898		2774	14727	0175	00339	0403
0500	0383	34907		2775	14743	0216	00527	0402

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0600	0376	34917		2777	14757	0256	00755	0397
0700	0372	34913		2777	14771	0297	01026	0404
0800	0368	34911		2777	14786	0338	01344	0410
1000	0360	34903		2777	14816	0422	02127	0423
1200	0350	34897		2778	14845	0509	03110	0432
1500	0338	34908	667	2780	14891	0640	04944	0434
2000	0317	34941	594 B	2784	14967	0857	08846	0419
2500	0260	34927	621 C	2788	15028	1061	13568	0383

C-REF-NO 003 YR 1963 DEPTH 2319 WAVES 1 18X4 AIR T 03.3 VIS 96
 CONS. NO 019 MONTH 5 MXSAMPD 20 WAVES 2 18X5 WET B 03.3 STN
 LAT 60-260N DAY 31 NO.DPTH 18 WND-DIR 180 WW-CODE 61
 LON 59-200W HR 00.8 W-COLOR WND-SPD 12 CLD-TPE 7
 MARSD SQ 222 W-TRNSP BARO 1016.4 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
008	0000	0250 B	34486	771	2754	14597	050				009	819
008	0010	0227	34465	616	2754	14589	042				008	821
008	0019	0228	34465	704	2754	14591	045				009	824
008	0029	0231	34480	704	2755	14594	061				006	824
008	0048	0256	34565	685	2760	14609	060				008	825
008	0072	0360	34799	686	2769	14661	077				009	811
008	0096	0400	34877	642	2771	14683	101				011	811
008	0144	0391	34874		2772	14687						
008	0192	0397	34904		2773	14698						
008	0287	0373	34880		2774	14703						
008	0383	0379	34905		2775	14722						
008	0483	0377	34910		2776	14737						
000	0595	0371	34909		2777	14753						
000	0790	0368	34910		2777	14784						
000	0990	0362	34915	658	2778	14815	111				013	804
000	1190	0354	34913	654	2779	14845	115				012	807
000	1485	0341	34934	620	2781	14890	112				014	806
000	1980	0279	34937	624	2788	14947	113				015	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0250 B	34486	771	2754	14597	0000	00000	0554
0010	0227	34465	616	2754	14589	0006	00000	0552
0020	0228	34466	706	2754	14591	0011	00001	0553
0030	0231	34482	703	2755	14594	0017	00003	0544
0050	0264	3459 B	685	2761	14613	0027	00007	0494
0075	0368	34814	682	2769	14665	0039	00014	0416
0100	0401	34880		2771	14684	0049	00023	0403
0125	0401 C	3489 C		2772	14688	0059	00035	0401
0150	0392	34878		2772	14688	0069	00049	0400
0175	0395	34893		2773	14694	0079	00066	0394
0200	0395	34903		2774	14698	0089	00085	0389
0225	0390 B	3490 B		2774	14700	0099	00107	0389
*0250	0383 B	3489 B		2774	14701	0109	00131	0390
0300	0373	34883		2774	14705	0128	00186	0391
0400	0379	34907		2776	14724	0168	00328	0389
0500	0376	34910		2776	14740	0207	00511	0392
0600	0371	34909		2777	14754	0247	00736	0396
0700	0369	34909		2777	14770	0288	01007	0403

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0368	34910		2777	14786	0329	01325	0410
1000	0362	34915	658	2778	14817	0412	02101	0417
1200	0354	34914	653	2779	14847	0498	03068	0425
1500	0336 B	3493 B	632 B	2781	14890	0626	04853	0419
2000	0276	34938	624	2788	14949	0826	08423	0367

C-REF-NO 003	YR 1963	DEPTH 1300	WAVES 1 15X1	AIR T 03.9	VIS 98
CONS. NO 020	MONTH 5	MXSAMPD 13	WAVES 2 15X1	WET B 02.2	STN
LAT 60-120N	DAY 31	NO.DPTH 16	WND-DIR 320	WW-CODE 03	
LON 60-315W	HR 05.7	W-COLOR	WND-SPD 07	CLD-TPE 7	
MARSD SQ 223		W-TRNSP	BARO 1005.1	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
057	0000	0030 B	33705	617	2707	14489	035			004	823
057	0010	0026	33687	538	2706	14488	028			004	832
057	0019	0070	33916	588	2721	14513	028			004	832
057	0029	0094	34007	582	2727	14527	030			004	831
057	0048	0111	34069	598	2731	14538	034			003	831
057	0072	0177	34296	557	2745	14575	045			005	828
057	0096	0344	34755	548	2767	14657	094			008	817
057	0144	0383	34833		2769	14683					
057	0192	0402	34874		2771	14699					
057	0288	0390	34878		2772	14710					
052	0498	0382	34880		2773	14741					
052	0597	0382	34900		2775	14758					
052	0697	0380	34907	512	2775	14774	110			012	811
052	0896	0372	34901	478	2776	14804	108			012	809
052	1095	0364	34892	479	2776	14833	118			013	808
052	1293	0354	34912	503	2778	14863	113			014	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0030 B	33705	617	2707	14489	0000	00000	1003
0010	0026	33687	538	2706	14488	0010	00001	1014
0020	0073	33930	589	2722	14515	0020	00002	0855
0030	0095	34011	583	2728	14527	0028	00004	0806
0050	0114	34080	595	2732	14540	0044	00011	0765
0075	0198 B	3436 C	555	2748	14585	0061	00021	0616
0100	0355 C	3478 E		2768	14663	0074	00033	0430
0125	0392 G	3487 I		2771	14684	0085	00045	0403
0150	0386	34840		2769	14685	0095	00060	0423
0175	0397	34863		2770	14694	0106	00078	0419
0200	0402	34876		2771	14701	0116	00098	0417
0225	0401 B	3488 B		2771	14705	0127	00121	0414
*0250	0398 B	3488 B		2772	14708	0137	00146	0413
0300	0389	34877		2772	14712	0158	00205	0412
0400	0383	34876		2773	14726	0200	00356	0416
0500	0382	34880		2773	14742	0242	00552	0421
0600	0382	34900		2775	14759	0285	00791	0415
0700	0380	34907	511	2775	14775	0327	01072	0417
0800	0376	34906	493	2776	14790	0369	01400	0423
1000	0368	34895	475	2776	14819	0456	02210	0439

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1200	0359	34904	487	2777	14849	0545	03218	0438

C-REF-NO 003	YR 1963	DEPTH 1207	WAVES 1 28X1	AIR T 01.7	VIS 98
CONS. NO 021	MONTH 5	MXSAMPD 12	WAVES 2 28X5	WET B 00.6	STN
LAT 63-100N	DAY 31	NO.DPTH 16	WND-DIR 280	WW-CODE 02	
LON 60-130W	HR 22.4	W-COLOR	WND-SPD 10	CLD-TPE 8	
MARSD SQ 223		W-TRNSP	BARO 1006.6	CLD-AMT 6	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2 NO3	SIO	PH
224	0000	-0055 B	33423	849	2688	14446	TRC		004	833
224	0010	0026	33415	894	2684	14484	TRC		005	838
224	0020	-0073	33419	874	2688	14441	TRC		004	839
224	0030	-0040	33628	810	2704	14460	TRC		002	838
224	0050	-0044	33887	793 B	2725	14465	045		004	822
224	0075	0086	34164	745	2740	14533	075		004	818
224	0100	0186	34360	758	2749	14584	084		006	817
224	0150	0290	34588		2759	14641				
224	0199	0324	34678		2763	14665				
224	0298	0380	34792		2766	14706				
217	0385	0370	34786		2767	14716				
217	0480	0433	34913		2770	14760				
217	0576	0427	34925	696	2772	14774	100		011	814
217	0779	0417	34933	580	2774	14803	099		011	812
217	0961	0406	34925	670	2774	14829	104		011	811
217	1152	0394	34941	690	2777	14856	105		012	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0055 B	33423	849	2688	14446	0000	00000	1180
0010	0026	33415	894	2684	14484	0012	00001	1222
0020	-0073	33419	874	2688	14441	0024	00002	1176
0030	-0040	33628	810	2704	14460	0035	00005	1028
0050	-0044	33887	793 B	2725	14465	0054	00013	0828
0075	0086	34164	745	2740	14533	0073	00025	0684
0100	0186	34360	758	2749	14584	0089	00039	0605
0125	0250 B	34496		2755	14618	0104	00056	0554
0150	0290	34588		2759	14641	0117	00075	0521
0175	0312 B	3464 B		2761	14655	0130	00097	0500
0200	0325	34680		2763	14665	0143	00121	0487
0225	0343	34719		2764	14678	0155	00147	0478
*0250	0358	34750		2765	14689	0167	00176	0471
0300	0380	34792		2766	14707	0191	00243	0466
0400	0380 B	3481 B		2767	14723	0238	00412	0465
0500	0435	34921		2771	14764	0284	00626	0450
0600	0426	34927	678	2772	14777	0329	00882	0445
0700	0421	34932	615 B	2773	14792	0374	01183	0445
0800	0416	34932	587	2774	14807	0419	01532	0450
1000	0404	34933	633 E	2775	14835	0511	02380	0454

C-REF-NO 003 YR 1963 DEPTH 1720 WAVES 1 25X2 AIR T 02.8 VIS 98
 CONS. NO 022 MONTH 6 MXSAMPD 17 WAVES 2 25X4 WET B 01.1 STN
 LAT 63-115N DAY 01 NO.DPTH 18 WND-DIR 250 WW-CODE 02
 LON 58-130W HR 04.9 W-COLOR WND-SPD 10 CLD-TPE 6
 MARSD SQ 222 W-TRNSP BARO 1009.3 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
049	0000	0125 B	34084	819	2731	14537	044			003	826
049	0009	0027	33986	822	2730	14493	020			003	833
049	0018	-0072	33989	824	2734	14449	024			003	834
049	0027	0116	33990	814	2725	14536	027			002	833
049	0044	0117	33995	830	2725	14539	030			002	834
049	0066	0175	34263	766	2742	14572	072			004	822
049	0087	0208	34354	750	2747	14592	090			006	819
049	0131	0287	34521		2754	14636					
049	0177	0325	34648		2760	14661					
049	0271	0382	34782		2765	14703					
049	0366	0426	34880		2768	14738					
039	0608	0430	34931		2772	14781					
039	0704	0424	34932		2773	14794					
039	0907	0413	34927		2774	14823					
039	1105	0394	34931	691	2776	14848	114			012	809
039	1305	0370	34920	675	2777	14871	114			013	810
039	1604	0349	34926	663	2780	14913	114			014	810
039	1704	0332	34938	655	2783	14923	113			015	809

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0125 B	34084	819	2731	14537	0000	00000	0768
0010	0009 C	33984	823	2730	14485	0008	00000	0779
0020	-0037 F	33989	822	2733	14465	0016	00002	0754
0030	0132 F	3398 B	817	2723	14543	0024	00004	0849
0050	0131 B	3406 E	815	2729	14547	0040	00010	0790
0075	0190	3431 B	756	2745	14581	0058	00022	0643
0100	0233	34407	745	2749	14605	0074	00036	0605
0125	0277	34500		2753	14630	0089	00053	0573
0150	0306	34579		2757	14648	0103	00073	0542
0175	0324	34643		2760	14660	0116	00095	0512
0200	0341	3469 B		2762	14672	0129	00119	0495
0225	0357	3473 B		2764	14684	0141	00146	0483
*0250	0371	3476 B		2765	14694	0153	00176	0476
0300	0397	34816		2766	14714	0177	00243	0466
0400	0432 B	3490 B		2769	14747	0223	00410	0453
0500	0439 C	3493 C		2771	14767	0269	00620	0448
*0600	0431	34932		2772	14780	0314	00876	0448
0700	0424	34932		2773	14793	0360	01180	0450

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0419	34930		2773	14808	0405	01534	0455
1000	0405	34929		2775	14835	0498	02391	0458
1200	0382	34926	683	2777	14859	0590	03433	0451
1500	0358 B	34920	667	2779	14899	0727	05341	0450

C-REF-NO 003	YR 1963	DEPTH 2023	WAVES 1 12X2	AIR T -00.6	VIS 98
CONS. NO 023	MONTH 6	MXSAMPD 19	WAVES 2 14X5	WET B -02.2	STN
LAT 63-119N	DAY 01	NO.DPTH 18	WND-DIR 240	WW-CODE 70	
LON 57-195W	HR 09.9	W-COLOR	WND-SPD 10	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1010.5	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
099	0000	0235 B	34052	821	2721	14585	TRC			006	830
099	0010	0226	34149	810	2729	14584	TRC			004	836
099	0020	0224	34147	810	2729	14585	TRC			004	839
099	0030	0227	34154	819	2729	14588	012			002	838
099	0050	0256	34277	802	2737	14605	013			002	838
099	0074	0350	34689	710	2761	14655	090			008	822
099	0098	0356	34739	703	2765	14663	093			008	817
099	0147	0358	34751		2765	14672					
099	0196	0374	34806		2768	14687					
099	0295	0426	34909		2771	14727					
099	0395	0415	34909		2772	14739					
090	0506	0405	34912		2773	14753					
090	0597	0404	34903		2773	14767					
090	0789	0403	34929		2775	14799					
090	0978	0382	34921	679	2776	14822	105			013	814
090	1166	0362	34918	655	2778	14845	110			013	812
090	1450	0352	34919	654	2779	14888	107			013	812
090	1924	0327	34944	672	2784	14958	112			014	813

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0235 B	34052	821	2721	14585	0000	00000	0871
0010	0226	34149	810	2729	14584	0008	00000	0791
0020	0224	34147	810	2729	14585	0016	00002	0791
0030	0227	34154	819	2729	14588	0024	00004	0789
0050	0256	34277	802	2737	14605	0040	00010	0720
0075	0351	34695	709	2761	14656	0055	00019	0491
0100	0356	34740		2765	14663	0067	00030	0463
0125	0357	3475 B		2765	14668	0078	00043	0459
0150	0359	34754		2765	14673	0090	00060	0460
0175	0366	34780		2767	14680	0101	00079	0450
0200	0376	34811		2768	14689	0113	00101	0439
0225	0391 B	34842		2769	14700	0124	00125	0433
*0250	0405 B	3487 B		2770	14710	0135	00151	0429
0300	0426	34910		2771	14728	0156	00212	0427
0400	0414	34909		2772	14739	0199	00367	0425
0500	0405	34912		2773	14752	0242	00565	0423
0600	0404	34903		2773	14768	0286	00812	0438
0700	0405	3492 B		2774	14785	0330	01109	0439

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0402	34929		2775	14801	0374	01450	0436
1000	0379	34920		2777	14824	0462	02265	0433
1200	0360	34918	654	2778	14850	0550	03256	0430
1500	0343 B	34921	647	2780	14893	0680	05078	0431

C-REF-NO 003	YR 1963	DEPTH 1554	WAVES 1 24X3	AIR T -00.5	VIS 98
CONS. NO 024	MONTH 6	MXSAMPD 15	WAVES 2 14X6	WET B -02.0	STN
LAT 63-200N	DAY 01	NO.DPTH 17	WND-DIR 240	WW-CODE 70	
LON 56-070W	HR 14.4	W-COLOR	WND-SPD 13	CLD-TPE 1	
MARSD SQ 222		W-TRNSP	BARO 1014.3	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
144	0000	0185 B	33896	796 B	2712	14561	017		TRC	005	830
144	0009	0172	33872	815	2711	14556	014		TRC	004	829
144	0017	0211	34011	905	2719	14577	012		TRC	004	835
144	0026	0264	34273	778	2736	14605	020		016	003	833
144	0037	0288	34425	732	2746	14619	032		028	004	828
144	0065	0340	34637	768	2758	14649	096		123	009	804
144	0087	0364	34714	719	2762	14664	106		137	009	807
144	0130	0400	34825		2767	14688					
144	0174	0396	34842		2769	14693					
144	0263	0432	34917		2771	14724					
144	0354	0434	34933		2772	14740					
138	0480	0422	34931		2773	14756					
138	0576	0416									
138	0768	0398	34924	684	2775	14794	116		157	012	804
138	0960	0379	34918	636	2776	14817	115		155	013	804
138	1150	0360	34927	683	2779	14841	121		151	013	804
138	1460	0352	34917	576	2779	14890	116		165	014	802

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0185 B	33896	796 B	2712	14561	0000	00000	0952
0010	0175	33883	830	2712	14558	0010	00000	0955
0020	0230	3410 C	872 C	2725	14587	0019	00002	0832
0030	0275	3434 B	752	2740	14611	0026	00004	0686
0050	0314	3455 B	742 C	2753	14634	0039	00009	0566
0075	0352	34678	750	2760	14656	0052	00017	0504
0100	0378	34755		2764	14672	0065	00028	0473
0125	0397	34816		2766	14686	0076	00042	0450
0150	0400	3484 B		2768	14691	0088	00058	0438
0175	0396	34843		2769	14694	0099	00076	0433
0200	0405 B	3486 B		2769	14702	0109	00097	0429
*0225	0415 B	3489 B		2770	14710	0120	00121	0426
*0250	0426	34906		2771	14719	0131	00147	0425
0300	0435	34928		2771	14732	0152	00207	0424
0400	0430	34934		2772	14746	0195	00361	0424
0500	0421	34931		2773	14759	0238	00560	0426
0600	0414	34928		2774	14773	0281	00806	0430
0700	0405	34926		2774	14785	0325	01097	0432
0800	0395	34923	673	2775	14798	0369	01434	0432

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0375	34920	646	2777	14822	0456	02241	0428
1200	0360	34921	634 E	2779	14850	0542	03223	0427

C-REF-NO 003	YR 1963	DEPTH 1500	WAVES 1 22XX	AIR T 01.7	VIS 98
CONS. NO 025	MONTH 6	MXSAMPD 14	WAVES 2 49X3	WET B 00.0	STN
LAT 63-372N	DAY 01	NO.DPTH 17	WND-DIR 220	WW-CODE 03	
LON 55-230W	HR 18.8	W-COLOR	WND-SPD 12	CLD-TPE 6	
MARSD SQ 222		W-TRNSP	BARO 1015.3	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
188	0000	0235 B	34131	885	2727	14586	018			003	827
188	0010	0210	34073	865	2724	14576	TRC			002	833
188	0019	0211	34025	870	2720	14577	TRC			002	834
188	0029	0224	34114	850	2727	14586	021			003	831
188	0048	0293	34442	752	2747	14623	075			005	821
188	0072	0326	34591	734	2756	14644	095			010	816
188	0097	0341	34639	732	2758	14655	093			009	811
188	0144	0376	34751		2763	14679					
188	0193	0406	34824		2766	14701					
188	0287	0430	34912		2771	14727					
188	0373	0429	34922		2771	14741					
181	0494	0429	34807		2762	14760					
181	0593	0423	34876		2768	14774					
181	0792	0403	34858	709	2769	14799	112			012	809
181	0990	0382	34918	686	2776	14824	110			013	810
181	1189	0360	34903	681	2777	14848	113			013	809
181	1388	0349	34921	670	2780	14877	115			014	808

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0235 B	34131	885	2727	14586	0000	00000	0811
0010	0210	34073	865	2724	14576	0008	00000	0836
0020	0212	34029	869	2721	14578	0017	00002	0871
0030	0227	34131	845	2728	14588	0025	00004	0806
0050	0297	34462	748	2748	14626	0040	00010	0615
0075	0328	34599	733	2756	14645	0054	00019	0541
0100	0343	34646		2758	14656	0068	00031	0522
0125	0362	34706		2761	14669	0080	00046	0496
0150	0380	34762		2764	14682	0093	00063	0475
0175	0396	34801		2765	14693	0105	00083	0464
0200	0409	34833		2767	14703	0116	00105	0456
0225	0418	34862		2768	14711	0128	00130	0446
*0250	0425	34886		2769	14719	0139	00157	0438
0300	0431	34918		2771	14730	0161	00219	0426
0400	0429	3489 D		2769	14745	0205	00379	0453
0500	0429	34810		2763	14761	0254	00610	0525
0600	0422	34876		2769	14775	0305	00896	0479
0700	0413	3487 D		2769	14788	0354	01220	0479
0800	0402	34860	708	2769	14800	0402	01597	0487

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0381	34918	686	2776	14825	0496	02459	0437
1200	0361	3492 D	676	2779	14850	0584	03451	0428

C-REF-NO 003	YR 1963	DEPTH 1115	WAVES 1 22X2	AIR T 00.0	VIS 97
CONS. NO 026	MONTH 6	MXSAMPC 11	WAVES 2 22X5	WET B -00.6	STN
LAT 63-483N	DAY 01	NO.DPTH 16	WND-DIR 220	WW-CODE 77	
LON 54-330W	HR 22.8	W-COLOR	WND-SPD 09	CLD-TPE 6	
MARSD SQ 222		W-TRNSP	BARO 1016.5	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
228	0000	0147 B	33741	745	2702	14542	TRC			003	831
228	0010	0210	33707	665	2695	14571	TRC			003	836
228	0020	0144	33704	717	2700	14543	TRC			003	838
228	0030	0144	33704	747	2700	14545	TRC			002	837
228	0050	0114	33845	765	2713	14537	022			002	834
228	0074	0119	34004	660	2725	14545	052			004	826
228	0099	0157	34162	646 D	2735	14568	079			005	821
228	0149	0237	34383		2747	14615					
228	0198	0310	34552		2754	14657					
228	0297	0408	34806		2765	14718					
223	0445	0444	34922		2770	14759					
223	0545	0439	34936		2771	14774					
223	0643	0426	34947	579	2774	14785	107			011	813
223	0792	0410	34935	593	2775	14803	104			011	812
223	0940	0398	34936	596	2776	14822	102			011	811
223	1092	0386	34937	558	2777	14843	105			011	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0147 B	33741	745	2702	14542	0000	00000	1043
0010	0210	33707	665	2695	14571	0011	00001	1113
0020	0144	33704	717	2700	14543	0022	00002	1070
0030	0144	33704	747	2700	14545	0033	00005	1070
0050	0114	33845	765	2713	14537	0053	00013	0944
0075	0120	34011	658	2726	14546	0075	00027	0822
0100	0159	34167		2736	14569	0095	00045	0730
0125	0199	34288		2742	14593	0112	00065	0670
0150	0239	34387		2747	14616	0129	00088	0628
0175	0277	34477		2751	14638	0144	00114	0594
0200	0313	34558		2754	14658	0159	00142	0567
0225	0343	34634		2757	14677	0173	00172	0541
*0250	0369	34702		2760	14693	0186	00205	0519
0300	0410	34810		2765	14719	0211	00276	0484
0400	0443 B	3491 C		2769	14751	0259	00446	0457
0500	0443	34933		2771	14768	0305	00658	0450
0600	0432	34943		2773	14780	0350	00913	0440
0700	0419	34944	584	2774	14792	0394	01209	0435
0800	0409	34935	594	2775	14804	0438	01550	0440
1000	0393	34934	581	2776	14830	0527	02375	0439

C-REF-NO 003	YR 1963	DEPTH 1206	WAVES 1 20X2	AIR T -00.9	VIS 99
CONS. NO 027	MONTH 6	MXSAMPD 12	WAVES 2 49X3	WET B -01.9	STN
LAT 63-542N	DAY 02	NO.DPTH 16	WND-DIR 200	WW-CODE 26	
LON 53-535W	HR 02.2	W-COLOR	WND-SPD 08	CLD-TPE X	
MARSO SQ 222		W-TRNSP	BARO 1016.3	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
022	0000	0150 B	33856	808 D	2711	14545	015			005	823
022	0010	0136	33844	793	2711	14540	TRC			007	834
022	0019	0138	33829	828	2710	14542	013			003	835
022	0029	0138	33837	827	2711	14544	TRC			003	835
022	0049	0136	33987	785	2723	14548	052			004	824
022	0073	0147	34084	761	2730	14559	080			005	811
022	0098	0178	34210	745	2738	14578	091			008	814
022	0147	0284	34480		2751	14636					
022	0195	0306	34534		2753	14654					
022	0293	0386	34768		2764	14708					
015	0378	0420	34874		2769	14738					
015	0476	0432	34916		2771	14759					
015	0573	0430	34929	686	2772	14775	106			012	809
015	0773	0410	34921	681	2773	14799	106			012	807
015	0973	0395	34917	670	2775	14826	110			012	807
015	1172	0362	34921	720	2778	14846	111			013	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0150 B	33856	851 D	2711	14545	0000	00000	0958
0010	0136	33844	793	2711	14540	0010	00000	0958
0020	0138	33828	829	2710	14542	0019	00002	0972
0030	0138	33843	825	2711	14544	0029	00004	0960
0050	0136	33992	784	2723	14549	0047	00012	0847
0075	0149	34093	760	2731	14560	0068	00025	0779
0100	0183	34223		2738	14581	0087	00042	0706
0125	0238 C	3437 D		2746	14611	0103	00061	0639
0150	0286	34486		2751	14638	0119	00083	0594
0175	0301 B	3452 C		2752	14649	0134	00108	0582
0200	0310	34545		2753	14657	0148	00136	0574
0225	0330 B	3460 D		2756	14671	0163	00167	0552
*0250	0351 B	3466 D		2759	14684	0176	00200	0529
0300	0390	34780		2764	14711	0202	00272	0486
0400	0425	34888		2769	14743	0249	00442	0452
0500	0432	34921		2771	14764	0295	00652	0447
0600	0428	34929	685	2772	14778	0340	00907	0446
0700	0418	34926	682	2773	14791	0385	01209	0447
0800	0408	34920	678	2774	14803	0430	01559	0450
1000	0388	34918	685 B	2776	14828	0521	02398	0445

C-REF-NO 003 YR 1963 DEPTH 970 WAVES 1 19X2 AIR T 02.2 VIS 98
 CONS. NO 028 MONTH 6 MXSAMPD 08 WAVES 2 49XX WET B 01.1 STN
 LAT 63-593N DAY 02 NO.DPTH 15 WND-DIR 180 WW-CODE 85
 LON 53-215W HR 06.7 W-COLOR WND-SPD 10 CLD-TPE 8
 MARSD SQ 222 W-TRNSP BARO 1015.7 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
067	0000	0115 B	33615	858	2695	14526	029			004	829
067	0010	0086	33577	853	2693	14514	TRC			003	831
067	0020	0088	33581	852	2693	14517	018			004	831
067	0030	0086	33610	844	2696	14518	025			002	829
067	0050	0092	33668	834	2700	14525	038			003	829
067	0075	0102	33824	800	2712	14535	061			004	823
067	0099	0146	34007	783	2724	14561	069			006	822
067	0149	0214	34243		2738	14603					
067	0197	0263	34390		2745	14634					
060	0242	0288	34472		2750	14654					
060	0324	0346	34627		2757	14694					
060	0403	0384	34739	722	2762	14725	093			012	816
060	0484	0430		709			094			013	816
060	0667	0456	34940	704	2770	14801	097			011	812
060	0765	0444	34900	702	2768	14812	101			011	812

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0115 B	33615	858	2695	14526	0000	00000	1119
0010	0086	33577	853	2693	14514	0011	00001	1130
0020	0088	33581	852	2693	14517	0023	00002	1129
0030	0086	33610	844	2696	14518	0034	00005	1105
0050	0092	33668	834	2700	14525	0056	00014	1065
0075	0102	33824	800	2712	14535	0081	00030	0953
0100	0148	34013		2724	14562	0104	00050	0840
0125	0184	3415 B		2732	14585	0124	00074	0765
0150	0215	34247		2738	14604	0143	00100	0715
0175	0243	34331		2742	14621	0160	00129	0675
0200	0265	34396		2746	14636	0177	00161	0646
0225	0279	34444		2748	14647	0193	00196	0624
0250	0294	34488		2750	14658	0208	00234	0606
0300	0329	34583		2755	14682	0238	00318	0572
0400	0383	34735	720	2762	14724	0293	00515	0521
0500	0436	3486 C	708	2765	14764	0345	00753	0500
0600	0456	3492 B	704	2769	14790	0395	01034	0484
0700	0458	3492 B	701	2768	14807	0444	01365	0496

C-REF-NO 003 YR 1963 DEPTH 237 WAVES 1 17X2 AIR T 00.6 VIS 97
 CONS. NO 029 MONTH 6 MXSAMPD 02 WAVES 2 22X3 WET B -00.6 STN
 LAT 64-022N DAY 02 NO.DPTH 9 WND-DIR 170 WW-CODE 72
 LON 53-060W HR 09.1 W-COLOR WND-SPD 12 CLD-TPE 6
 MARSD SQ 222 W-TRNSP BARU 1014.2 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
091	0000	0120 B	33635	895	2696	14528	TRC	006	TRC	003	829
091	0010	0096	33612	901	2695	14519	011	005	TRC	003	834
091	0020	0096	33617	933	2696	14521	011	008	TRC	003	834
091	0030	0100	33641	880	2698	14524	017	005	TRC	002	834
091	0050	0106	33674	891	2700	14531	019	007	TRC	002	835
091	0075	0093	33765	819	2708	14530	042	005	TRC	003	829
091	0100	0094	33891	778	2718	14537	070	019	TRC	004	821
091	0149	0213	34086	760	2725	14600	084	020	057	007	818
091	0198	0195	34228	748	2738	14602	092		098	009	817

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0120 B	33635	895	2696	14528	0000	00000	1107
0010	0096	33612	901	2695	14519	0011	00001	1110
0020	0096	33617	933	2696	14521	0022	00002	1106
0030	0100	33641	880	2698	14524	0033	00005	1090
0050	0106	33674	891	2700	14531	0055	00014	1069
0075	0093	33765	819	2708	14530	0081	00031	0992
0100	0094	33891	778	2718	14537	0105	00052	0897
0125	0154 F	33998	763	2723	14569	0127	00077	0856
0150	0170 I	34092	748 B	2729	14582	0148	00107	0797
0175	0185 I	34170	744	2734	14594	0167	00139	0751
*0200	0196	34232	749	2738	14603	0186	00175	0712

C-REF-NO 003 YR 1963 DEPTH 225 WAVES 1 18X2 AIR T 00.6 VIS 97
 CONS. NO 030 MONTH 6 MXSAMPD 02 WAVES 2 18X2 WET B 00.0 STN
 LAT 64-053N DAY 02 NO.DPTH 9 WND-DIR 180 WW-CODE 26
 LON 52-468W HR 12.0 W-COLOR WND-SPD 11 CLD-TPE 3
 MARSD SQ 222 W-TRNSP BARO 1014.3 CLD-AMT 5 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
120	0000	0140 B	33643	826	2695	14537	022			003	823
120	0010	0104	33614	834	2695	14523	019			003	827
120	0020	0106	33617	829	2695	14525	010			003	827
120	0030	0106	33625	860	2696	14527	023			002	830
120	0050	0100	33674	860	2700	14528	026			002	823
120	0074	0116	33884	789	2716	14542	065			004	817
120	0099	0131	33949	775	2720	14554	069			005	813
120	0148	0172	34094	750	2729	14582	080			007	814
120	0198	0216	34246	726	2738	14612	085			008	813

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0140 B	33643	826	2695	14537	0000	00000	1113
0010	0104	33614	834	2695	14523	0011	00001	1113
0020	0106	33617	829	2695	14525	0022	00002	1112
0030	0106	33625	860	2696	14527	0034	00005	1106
0050	0100	33674	860	2700	14528	0055	00014	1065
0075	0117	33888	788	2716	14543	0080	00030	0913
0100	0132	33952	774	2720	14554	0103	00050	0875
0125	0152	34024	761	2725	14568	0124	00075	0835
0150	0172	34097	749	2729	14582	0145	00104	0795
0175	0194	34173	737	2734	14597	0165	00136	0755
*0200	0218	34252	725	2738	14613	0183	00172	0715

C-REF-NO 003	YR 1963	DEPTH 62	WAVES 1 18X3	AIR T 06.1	VIS 96
CONS. NO 031	MONTH 6	MXSAMPD C1	WAVES 2 18X4	WET B 03.3	STN
LAT 63-595N	DAY 02	NO.DPTH 6	WND-DIR 160	WW-CODE 85	
LON 52-220W	HR 16.5	W-COLOR	WND-SPD 15	CLD-TPE 2	
MARSD SQ 222		W-TRNSP	BARO 1013.8	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
165	0000	0180 B	33631		2691	14555	024			007	820
165	0010	0119	33589		2692	14529	016			006	828
165	0020	0120	33584		2692	14531	018			003	827
165	0030	0114	33592		2693	14530	021			003	822
165	0050	0110	33592		2693	14532	019			003	825
165	0054	0110	33585		2692	14532	023			003	826

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0180 B	33631		2691	14555	0000	00000	1149
0010	0119	33589		2692	14529	0012	00001	1141
0020	0120	33584		2692	14531	0023	00002	1146
0030	0114	33592		2693	14530	0035	00005	1136
0050	0110	33592		2693	14532	0057	00015	1134

C-REF-NO 003	YR 1963	DEPTH 1914	WAVES 1 21X2	AIR T 01.7	VIS 98
CONS. NO 032	MONTH 6	MXSAMPD 19	WAVES 2 21X2	WET B 00.0	STN
LAT 62-468N	DAY 03	NO.DPTH 18	WND-DIR 210	WW-CODE 02	
LON 53-110W	HR 14.5	W-COLOR	WND-SPD 05	CLD-TPE 6	
MARSD SQ 222		W-TRNSP	BARO 1017.3	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
145	0000	0345 B	34438	819	2742	14638	018			003	815
145	0010		34383	822			TRC			004	823
145	0020	0296	34388	813	2742	14619	012			003	823
145	0030	0300	34389	814	2742	14623	014			003	820
145	0050	0304	34405	806	2743	14628	023			003	820
145	0074	0306	34642	750	2762	14636	079			005	813
145	0099	0321	34711	742	2766	14647	089			007	812
145	0149	0363	34788		2768	14675					
145	0198	0404	34861		2769	14701					
145	0296	0452	34953		2771	14738					
145	0394	0433	34931		2772	14746					
145	0493	0416	34922		2773	14756					
138	0597	0408	34920		2774	14769					
138	0796	0394	34921		2775	14797					
138	0995	0374	34914	683	2777	14821	113			012	808
138	1194	0357	34902	676	2777	14847	117			012	808
138	1473	0351	34917	664	2779	14892	118			013	808
138	1866	0331	34933	652	2782	14950	116			014	806

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0345 B	34438	819	2742	14638	0000	00000	0672
0010	0319 B	34383	822	2740	14628	0007	00000	0691
0020	0296	34388	813	2742	14619	0014	00001	0668
0030	0300	34389	814	2742	14623	0020	00003	0671
0050	0304	34405	806	2743	14628	0034	00009	0664
0075	0306	34647	749	2762	14636	0048	00018	0486
0100	0322	34713		2766	14648	0060	00028	0452
0125	0342	34756		2767	14661	0071	00041	0440
0150	0364	34790		2768	14675	0083	00057	0438
0175	0385	34828		2769	14689	0094	00075	0433
0200	0406	34864		2769	14702	0104	00096	0430
0225	0423	34896		2770	14714	0115	00120	0427
*0250	0436	34921		2771	14724	0126	00146	0425
0300	0452	34953		2771	14739	0147	00207	0423
0400	0432	34930		2772	14747	0190	00362	0429
0500	0415	34922		2773	14756	0234	00562	0427
0600	0408	34920		2774	14770	0277	00807	0430
0700	0401	34921		2774	14784	0320	01098	0431

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0394	34921		2775	14797	0364	01435	0432
1000	0373	34914	683	2777	14822	0451	02244	0431
1200	0357	34902	676	2777	14848	0539	03242	0437
1500	0344 B	3491 B	664	2779	14893	0673	05100	0440

C-REF-NO 003 YR 1963 DEPTH 670 WAVES 1 12X2 AIR T 00.0 VIS 97
 CONS. NO 033 MONTH 6 MXSAMPD 06 WAVES 2 49XX WET B -00.6 STN
 LAT 65-055N DAY 07 NO.DPTH 14 WND-DIR 120 WW-CODE 70
 LON 57-450W HR 11.6 W-COLOR WND-SPD 04 CLD-TPE 8
 MARSD SQ 222 W-TRNSP BARO 1021.6 CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
116	0000	-0065 B	33073		2660	14436	TRC			TRC	003	837
116	0010	-0092	33125		2665	14426	TRC			TRC	004	843
116	0020	-0087	33276		2677	14432	TRC		TRC	TRC	002	845
116	0030	-0141	33300		2681	14409	TRC		TRC	TRC	002	843
116	0050	-0070	33605		2703	14449	018		013	015	002	835
116	0074	-0023	33730		2711	14477	035		010	034	003	829
116	0099	0108	34055		2730	14545	079		020	106	007	817
116	0149	0232	34354		2745	14612						
116	0198	0321	34554		2753	14662						
112	0289	0372	34695		2759	14700						
112	0385	0421	34826		2765	14738	104		TRC	146	012	814
112	0482	0440	34900		2769	14763	103		TRC	148	013	814
112	0578	0391	34880		2772	14759	108		TRC	029	015	814
112	0626	0332	34822		2773	14741	114		003	152	020	810

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0065 B	33073		2660	14436	0000	00000	1445
0010	-0092	33125		2665	14426	0014	00001	1395
0020	-0087	33276		2677	14432	0028	00003	1280
0030	-0141	33300		2681	14409	0040	00006	1245
0050	-0070	33605		2703	14449	0063	00015	1033
0075	-0018	33742		2712	14480	0088	00031	0950
0100	0112	34064		2731	14547	0110	00050	0777
0125	0186 C	3425 E		2740	14587	0129	00072	0692
0150	0234	34359		2745	14614	0146	00095	0645
0175	0284	34471		2750	14641	0161	00122	0605
0200	0323	34559		2753	14663	0176	00150	0576
0225	0344 C	3461 C		2756	14677	0191	00182	0558
*0250	0360 C	3465 D		2757	14688	0204	00215	0544
0300	0379	34712		2760	14705	0231	00292	0525
0400	0427	34842		2765	14744	0283	00475	0489
0500	0437	34905		2769	14765	0331	00697	0464
0600	0365	34855		2773	14751	0376	00952	0430

C-REF-NO 003	YR 1963	DEPTH 708	WAVES 1 16X2	AIR T 00.0	VIS 98
CONS. NO 034	MONTH 6	MXSAMPD 06	WAVES 2 00X0	WET B -00.6	STN
LAT 65-060N	DAY 07	NO.DPTH 14	WND-DIR 160	WW-CODE 03	
LON 56-300W	HR 16.8	W-COLOR	WND-SPD 02	CLD-TPE 8	
MARSD SQ 222		W-TRNSP	BARO 1022.1	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2 NO3	SIO	PH
168	0000	0120 B	33690	851	2700	14529	027		003	832
168	0010	0098	33738	838	2705	14522	013		003	836
168	0020	0096	33799	849	2710	14523	014		003	836
168	0030	0113	33834	845	2712	14533	015		002	838
168	0050	0080	33843	835	2715	14522	031		002	833
168	0074	0122	34055	798	2729	14547	063		004	819
168	0099	0154	34164	775	2736	14567	076		003	821
168	0149	0242	34405		2748	14617				
168	0198	0319	34558		2754	14661				
164	0282	0378	34709		2760	14702				
164	0376	0441	34855	695	2765	14746	101		010	816
164	0470	0452	34920	675	2769	14767	108		012	814
164	0564	0408	34908	663	2773	14764	110		013	812
164	0639	0330	34828	649	2774	14742	118		018	807

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0120 B	33690	851	2700	14529	0000	00000	1065
0010	0098	33738	838	2705	14522	0010	00001	1015
0020	0096	33799	849	2710	14523	0020	00002	0967
0030	0113	33834	845	2712	14533	0030	00005	0951
0050	0080	33843	835	2715	14522	0049	00012	0925
0075	0123	34060	797	2730	14548	0071	00026	0787
0100	0156	34169		2736	14568	0090	00043	0727
0125	0198	3429 B		2743	14593	0107	00063	0666
0150	0244	34409		2748	14618	0123	00086	0616
0175	0285	34494		2752	14642	0139	00111	0589
0200	0321	34563		2754	14662	0153	00139	0572
0225	0343 B	3462 B		2756	14676	0167	00170	0555
*0250	0361 B	3466 B		2758	14689	0181	00204	0541
0300	0392	34741		2761	14711	0208	00279	0517
0400	0449	34879	689	2766	14753	0259	00461	0486
0500	0444	34926	671	2770	14769	0306	00681	0457
0600	0375	34875	655	2773	14755	0351	00932	0426

C-REF-NO 003 YR 1963 DEPTH 765 WAVES 1 11X1 AIR T 02.2 VIS 98
 CONS. NO 035 MONTH 6 MXSAMPD 07 WAVES 2 00X0 WET B 01.4 STN
 LAT 65-060N DAY 07 NO.DPTH 14 WND-DIR 110 WW-CODE 01
 LON 55-400W HR 20.2 W-COLOR WND-SPD 05 CLD-TPE 6
 MARSD SQ 222 W-TRNSP BARO 1023.0 CLD-AMT 6 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
202	0000	0135 B	33648	850	2696	14535	TRC			002	832
202	0010	0099	33627	784	2697	14521	TRC			002	837
202	0019	0082	33631	752	2698	14514	TRC			002	839
202	0029	0068	33648	788	2700	14510	TRC			002	838
202	0049	-0018	33652	806	2705	14474	011			002	836
202	0073	0080	33941	725	2723	14527	062			003	821
202	0098	0127	34104	720	2733	14554	085			006	817
202	0146	0236	34368		2746	14614					
202	0195	0328	34570		2754	14664					
199	0299	0390	34741		2761	14710					
199	0398	0452	34877	667 D	2765	14754	100			010	814
199	0496	0450	34922	634	2769	14770	102			010	814
199	0595	0449	34955	602	2772	14787	106			011	813
199	0743	0398	34945	638	2777	14790	102			012	814

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0135 B	33648	850	2696	14535	0000	00000	1106
0010	0099	33627	784	2697	14521	0011	00001	1100
0020	0081	33633	754	2698	14514	0022	00002	1085
0030	0063	33646	791	2700	14508	0033	00005	1065
0050	-0016	33662	803	2706	14475	0054	00014	1012
0075	0085	33957	723	2724	14529	0077	00028	0841
0100	0131	34116		2734	14557	0097	00046	0750
0125	0188	34260		2741	14588	0115	00067	0682
0150	0245	34387		2747	14618	0132	00090	0633
0175	0294	34496		2751	14645	0147	00116	0595
0200	0333	34583		2754	14667	0162	00144	0568
0225	0355 C	3464 D		2757	14682	0176	00175	0549
*0250	0372 D	3468 E		2759	14694	0190	00208	0534
0300	0391	34743		2761	14711	0216	00283	0514
0400	0452	34878	666 D	2765	14755	0267	00465	0490
0500	0450	34924	632	2769	14771	0315	00688	0465
0600	0442 B	34952	611 B	2772	14785	0361	00948	0446
0700	0415	34952	624	2775	14790	0405	01241	0423

C-REF-NO 003	YR 1963	DEPTH 416	WAVES 1 00X0	AIR T 03.3	VIS 99
CONS. NO 036	MONTH 6	MXSAMPD '04	WAVES 2 00X0	WET B 02.2	STN
LAT 65-060N	DAY 07	NO.DPTH 11	WND-DIR CALM	WW-CODE 01	
LON 54-550W	HR 23.8	W-COLOR	WND-SPD 00	CLD-TPE 6	
MARSD SQ 222		W-TRNSP	BARO 1022.5	CLD-AMT 1	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
238	0000	0210 B	33779	619 C	2701	14570	011			003	830
238	0010	0188	33743	636	2700	14562	TRC			004	841
238	0020	0156	33747	636	2702	14549	TRC			003	840
238	0029	0150	33757	625	2704	14548	TRC			004	839
238	0049	0124	33922	596	2719	14542	052			004	830
238	0074	0161	34100	581	2730	14565	073			006	823
238	0098	0180	34189	563	2736	14579	078			006	821
238	0148	0210	34289	582	2742	14602	078			008	820
238	0197	0284	34498	532	2752	14645	098			009	820
238	0295	0332	34625	540	2758	14683	095			008	819
238	0394	0332	34625	542	2758	14700	097			007	818

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0210 B	33779	619 C	2701	14570	0000	00000	1058
0010	0188	33743	636	2700	14562	0011	00001	1070
0020	0156	33747	636	2702	14549	0021	00002	1045
0030	0148	33763	623	2704	14548	0032	00005	1028
0050	0125	33930	595	2719	14543	0051	00013	0886
0075	0162	34105	580	2731	14566	0072	00026	0779
0100	0181	34193	564	2736	14580	0091	00043	0727
0125	0194 B	3424 C	573 B	2739	14590	0109	00064	0700
0150	0213	34297	580	2742	14603	0126	00088	0675
0175	0250 B	3440 C	556	2747	14625	0143	00115	0626
0200	0287	34506	531	2752	14647	0158	00145	0583
0225	0307 B	3456 C	527	2755	14660	0173	00176	0562
*0250	0321 B	3460 D	528 B	2757	14671	0187	00210	0549
0300	0346 D	3467 I	517 C	2760	14691	0214	00287	0525
0400	0329	34615	545	2757	14699	0268	00484	0555

C-REF-NO 003 YR 1963 DEPTH 105 WAVES 1 02XX AIR T 01.4 VIS 99
 CONS. NO 037 MONTH 6 MXSAMPD 01 WAVES 2 00X0 WET B 00.0 STN
 LAT 65-060N DAY 08 NO.DPTH 7 WND-DIR 360 WW-CODE 01
 LON 54-240W HR 02.6 W-COLOR WND-SPD 07 CLD-TPE 0
 MARSD SQ 222 W-TRNSP BARO 1022.0 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
026	0000	0190 B	33678	848	2694	14560	022			004	829
026	0009	0160	33624	838	2692	14548	TRC			003	835
026	0019	0155	33625	841	2693	14547	017			003	835
026	0039	0092	33818	785	2712	14525	049			004	824
026	0064	0106	33926	740	2720	14537	079			006	818
026	0089	0165	34124	694	2732	14570	110			010	812
026	0099	0176	34139	694	2732	14577	108			009	812

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0190 B	33678	848	2694	14560	0000	00000	1120
0010	0159	33621	838	2692	14547	0011	00001	1143
0020	0152	33633	839	2693	14546	0023	00002	1129
0030	0121 C	3372 E	814	2703	14535	0034	00005	1042
0050	0089	3387 C	764	2717	14526	0053	00013	0910
0075	0132 B	3402 D	716	2726	14551	0075	00027	0822
0100	0178	34143	694	2732	14578	0095	00045	0763

C-REF-NO 003 YR 1963 DEPTH 85 WAVES 1 34XX AIR T 07.2 VIS 99
 CONS. NO 038 MONTH 6 MXSAMPD 01 WAVES 2 34XX WET B 04.4 STN
 LAT 65-060N DAY 08 NO.DPTH 6 WND-DIR 340 WW-CODE 03
 LON 53-570W HR 04.9 W-COLOR WND-SPD 05 CLD-TPE 0
 MARSD SQ 222 W-TRNSP BARO 1020.0 CLD-AMT 6 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
049	0000	0110 B	33562	825 B	2691	14523	023			003	838
049	0010	0098	33548	735	2690	14519	011			003	832
049	0020	0094	33552	840	2691	14519	018			003	834
049	0029	0064	33575	834	2694	14507	054			002	830
049	0049	0066	33780	768	2711	14514	095			004	820
049	0073	0111	33973	709	2723	14541	108			008	808

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0110 B	33562	825 B	2691	14523	0000	00000	1156
0010	0098	33548	735	2690	14519	0012	00001	1159
0020	0094	33552	840	2691	14519	0023	00002	1154
0030	0063	33583	831	2695	14507	0035	00005	1112
0050	0056 D	3375 I	780 B	2709	14510	0056	00014	0984
0075	0119	3400 B	702	2725	14545	0079	00028	0833

C-REF-NO 003	YR 1963	DEPTH 73	WAVES 1 34X1	AIR T 01.7	VIS 98
CONS. NO 039	MONTH 6	MXSAMPD 01	WAVES 2 34X2	WET B 01.1	STN
LAT 65-056N	DAY 08	NO.DPTH 6	WND-DIR 340	WW-CODE 03	
LON 53-335W	HR 07.3	W-COLOR	WND-SPD 08	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1018.9	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
073	0000	0165 B	33623	861	2692	14548	TRC			003	829
073	0009	0098	33613	866	2695	14520	TRC			003	836
073	0019	0125	33631	852	2695	14534	TRC			003	834
073	0028	0091	33685	816	2702	14521	034			004	827
073	0047	0062	33784	759	2711	14512	064			005	819
073	0061	0065	33796	754	2712	14516	067			005	818

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0165 B	33623	861	2692	14548	0000	00000	1145
0010	0100 B	33613	866	2695	14521	0011	00001	1111
0020	0122	33636	848	2696	14533	0023	00002	1107
0030	0086	33698	808	2703	14519	0033	00005	1038
0050	0059	3378 B	759	2711	14511	0053	00013	0959

C-REF-NO 003	YR 1963	DEPTH 132	WAVES 1 32X0	AIR T 02.2	VIS 98
CONS. NO 040	MONTH 6	MXSAMPD 01	WAVES 2 32X1	WET B 01.1	STN
LAT 65-062N	DAY 08	NO.DPTH 8	WND-DIR 330	WW-CODE 02	
LON 53-000W	HR 10.8	W-COLOR	WND-SPD 07	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1016.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
108	0000	0185 B	33657	814	2693	14558	027	004	TRC	005	827
108	0010	0098	33636	816	2697	14520	023	006	TRC	004	832
108	0020	0158	33635	801	2693	14549	027	006	TRC	004	832
108	0030	0125	33636	823	2696	14536	029	005	TRC	002	833
108	0055	0104	33661	822	2699	14531	034	006	TRC	002	833
108	0075	0084	33796	783	2711	14527	051	010	042	003	826
108	0100	0160	33636	809	2693	14563	028	005	TRC	002	831
108	0124	0114	33655	817	2698	14546	034	005	TRC	002	832

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0185 B	33657	814	2693	14558	0000	00000	1133
0010	0098	33636	816	2697	14520	0011	00001	1093
0020	0158	33635	801	2693	14549	0022	00002	1131
0030	0125	33636	823	2696	14536	0034	00005	1109
0050	0105 B	33648	828	2698	14530	0056	00014	1088
0075	0084	33796	783	2711	14527	0082	00031	0963
0100	0160	33636	809	2693	14563	0108	00055	1134
0125	0113	3365 B	819	2697	14546	0136	00087	1092

C-REF-NO 003	YR 1963	DEPTH 48	WAVES 1 36XX	AIR T 01.7	VIS 98
CONS. NO 041	MONTH 6	MXSAMPD 00	WAVES 2 36X6	WET B 00.6	STN
LAT 66-526N	DAY 10	NO.DPTH 5	WND-DIR 360	WW-CODE 01	
LON 54-130W	HR 01.6	W-COLOR	WND-SPD 23	CLD-TPE 0	
MARSD SQ 222		W-TRNSP	BARO 1019.3	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
016	0000	0120 B	33751	603 D	2705	14530	006	006	TRC	004	830
016	0009	0108	33716	655	2703	14526	010	003	TRC	006	836
016	0019	0106	33752	592	2706	14527	TRC	004	TRC	004	838
016	0029	0104	33760	632	2707	14528	019	TRC	TRC	003	838
016	0036	0102	33772	695	2708	14528		TRC	TRC	002	839

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0120 B	33751	603 D	2705	14530	0000	00000	1018
0010	0108	33718	649	2703	14526	0010	00001	1036
0020	0106	33753	592	2706	14527	0021	00002	1008
0030	0104	33766	634	2707	14528	0031	00005	0997

C-REF-NO 003	YR 1963	DEPTH 50	WAVES 1 36X6	AIR T 02.6	VIS 97
CONS. NO 042	MONTH 6	MXSAMPD 00	WAVES 2 36XX	WET B 02.0	STN
LAT 66-495N	DAY 10	NO.DPTH 5	WND-DIR 360	WW-CODE 01	
LON 54-405W	HR 03.5	W-COLOR	WND-SPD 15	CLD-TPE 0	
MARSD SQ 222		W-TRNSP	BARO 1018.2	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
035	0000	0085 8	33782	844	2710	14515	022			004	831
035	0010	0071	33763	858	2709	14510	011			004	834
035	0020	0071	33764	845	2709	14511	012			004	836
035	0030	0072	33760	846	2709	14513	013			003	837
035	0040	0070	33764	833	2709	14514	016			004	837

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0085 8	33782	844	2710	14515	0000	00000	0974
0010	0071	33763	858	2709	14510	0010	00001	0980
0020	0071	33764	845	2709	14511	0020	00002	0979
0030	0072	33760	846	2709	14513	0030	00005	0983

C-REF-NO 003	YR 1963	DEPTH 107	WAVES 1 36X5	AIR T 00.0	VIS 98
CONS. NO 043	MONTH 6	MXSAMPD 01	WAVES 2 36X6	WET B -01.1	STN
LAT 66-460N	DAY 10	NO.DPTH 7	WND-DIR 360	WW-CODE 02	
LON 55-315W	HR 06.2	W-COLOR	WND-SPD 15	CLD-TPE 2	
MARSD SQ 222		W-TRNSP	BARO 1019.0	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
062	0000	0085 B	33773	876	2709	14515	030			004	833
062	0009	0072	33754	890	2708	14510	015			005	835
062	0018	0074	33746	867	2708	14512	018			004	836
062	0027	0073	33751	883	2708	14513	020			004	835
062	0045	0073	33765	885	2709	14516	021			004	835
062	0068	0087	33939	790	2722	14529	070			006	823
062	0086	0086	33934	787	2722	14531	085			007	822

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0085 B	33773	876	2709	14515	0000	00000	0981
0010	0072	33753	887	2708	14510	0010	00001	0989
0020	0074	33746	869	2708	14512	0020	00002	0994
0030	0073	33749	887	2708	14514	0030	00005	0991
0050	0076	3380 D	865	2712	14519	0050	00013	0952
0075	0084	3391 H	807 C	2720	14528	0073	00027	0879

C-REF-NO 003 YR 1963 DEPTH 159 WAVES 1 36X3 AIR T -01.0 VIS 98
 CONS. NO 044 MONTH 6 MXSAMPD 01 WAVES 2 36X5 WET B -01.1 STN
 LAT 66-418N DAY 10 NO.DPTH 8 WND-DIR 360 WW-CODE 01
 LON 56-070W HR 08.5 W-COLOR WND-SPD 16 CLD-TPE 0
 MARSD SQ 222 W-TRNSP BARO 1018.9 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
085	0000	0080 B	33802	888	2712	14513	018			004	828
085	0009	0070	33778	901	2710	14509	014			004	833
085	0018	0070	33775	897	2710	14511	015			004	834
085	0028	0071	33776	897	2710	14513	018			004	833
085	0046	0069	33788	884	2711	14515	020			004	833
085	0069	0063	33856	829	2717	14517	050			006	823
085	0092	0090	33972	784	2725	14535	075			007	821
085	0138	0138	34106	759	2732	14566	086			009	816

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0080 B	33802	888	2712	14513	0000	00000	0956
0010	0070	33777	901	2710	14509	0010	00001	0969
0020	0070	33775	897	2710	14511	0019	00002	0971
0030	0071	33776	897	2710	14513	0029	00005	0970
0050	0067	33796	876	2712	14515	0049	00012	0953
0075	0069	33886	816	2719	14521	0072	00027	0886
0100	0088 C	3398 D	777	2725	14535	0093	00047	0826
0125	0117 B	3406 B	760	2730	14554	0114	00070	0782

C-REF-NO 003	YR 1963	DEPTH 348	WAVES 1 35X2	AIR T -00.6	VIS 98
CONS. NO 045	MONTH 6	MXSAMPD 03	WAVES 2 35X5	WET B -01.7	STN
LAT 66-335N	DAY 10	NO.DPTH 10	WND-DIR 350	WW-CODE 02	
LON 56-380W	HR 10.7	W-COLOR	WND-SPD 18	CLD-TPE 0	
MARSD SQ 222		W-TRNSP	BARO 1018.3	CLD-AMT 3	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
107	0000	0070 B	33758	702	2709	14508	TRC	003	TRC	004	833
107	0010	0070	33733	702	2707	14509	TRC	TRC	TRC	004	837
107	0019	0065	33733	692	2707	14508	TRC	003	TRC	004	839
107	0029	0065	33730	767	2707	14510	TRC	TRC	TRC	002	840
107	0048	0062	33732	698	2707	14512	TRC	TRC	TRC	002	842
107	0072	0087	33869	642	2717	14529	045	015	043	003	835
107	0096	0160	34159	610	2735	14569	085	018	100	006	824
107	0144	0222	34328	570 C	2744	14607	091	018	127	008	821
107	0192	0245	34391	638	2747	14626	097	016	125	009	822
107	0312	0280	34494	560	2752	14662	099	016	135	010	820

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0070 B	33758	702	2709	14508	0000	00000	0983
0010	0070	33733	702	2707	14509	0010	00001	1003
0020	0065	33733	699	2707	14508	0020	00002	1000
0030	0065	33729	767	2707	14510	0030	00005	1003
0050	0063	33738	692	2708	14512	0050	00013	0995
0075	0096	3391 B	637	2719	14534	0074	00028	0887
0100	0168	3419 B	604	2737	14574	0094	00046	0723
0125	0206 B	3430 F	577 B	2743	14596	0112	00066	0666
0150	0226	34339	577 C	2744	14610	0128	00090	0654
0175	0239	34375	611 B	2746	14620	0145	00117	0639
0200	0259 C	3443 F	590 G	2749	14634	0161	00147	0615
0225	0272 C	3447 F	584 F	2751	14644	0176	00181	0601
*0250	0280 C	3449 E	578 E	2752	14652	0191	00217	0593
*0300	0282	3450 B	564 B	2752	14661	0221	00302	0591

C-REF-NO 003 YR 1963 DEPTH 680 WAVES 1 34X2 AIR T -00.6 VIS 98
 CONS. NO 046 MONTH 6 MXSAMPD 06 WAVES 2 34X4 WET B -00.2 STN
 LAT 66-320N DAY 10 NO.DPTH 14 WND-DIR 340 WW-CODE 03
 LON 57-150W HR 14.8 W-COLOR WND-SPD 15 CLD-TPE 8
 MARSD SQ 222 W-TRNSP BARO 1017.4 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
148	0000	-0110 B	33421	763	2690	14420	073			009	814
148	0009	-0130	33400	737	2689	14412	067			012	812
148	0018	-0130	33392	723	2688	14413	068			009	823
148	0027	-0130	33400	737	2689	14415	067			008	821
148	0045	-0165	33465	696 B	2695	14402	093			011	819
148	0068	-0176	33549	707	2702	14402	094			010	817
148	0091	-0170	33572	703	2704	14409	094			010	812
148	0136	0043	33910		2723	14520					
148	0169	-0024	34028		2735	14500					
148	0285	0058	34241		2748	14556					
142	0381	0076	34377	512	2758	14582	123			024	787
142	0478	0099	34452	512	2763	14609	126			025	797
142	0577	0201	34618	529	2769	14673	130			024	798
142	0627	0199	34615	537	2769	14681	126			024	799

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0110 B	33421	763	2690	14420	0000	00000	1163
0010	-0130	33398	734	2689	14412	0012	00001	1174
0020	-0129	33392	726	2688	14414	0024	00002	1178
0030	-0135	33409	732	2690	14413	0035	00005	1163
0050	-0170	33486	696 B	2697	14401	0058	00015	1094
0075	-0179	3355 B	707	2702	14402	0085	00032	1038
0100	-0128 G	3363 E		2708	14431	0111	00055	0989
0125	-0010 H	3382 F		2718	14493	0134	00082	0893
0150	0038 G	3396 C		2727	14521	0156	00112	0815
0175	0007 G	3401 C		2733	14511	0176	00145	0755
0200	-0020 C	34054		2737	14504	0194	00181	0708
0225	-0005 F	34112		2741	14516	0211	00219	0671
*0250	0017 F	34168		2745	14530	0228	00259	0641
0300	0063	34267		2750	14561	0259	00347	0594
0400	0077	3439 B	510	2759	14586	0315	00545	0511
0500	0124 C	3450 C	515	2764	14625	0364	00773	0469
0600	0188 E	3460 D	531	2768	14671	0411	01034	0446

C-REF-NO 003	YR 1963	DEPTH 263	WAVES 1 33X1	AIR T -01.7	VIS 96
CONS. NO 047	MONTH 6	MXSAMPD 02	WAVES 2 00X0	WET B -01.7	STN
LAT 68-080N	DAY 11	NO.DPTH 10	WND-DIR 330	WW-CODE 70	
LON 57-060W	HR 03.3	W-COLOR	WND-SPD 04	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1011.6	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
033	0000	-0135 B	33263	970	2678	14406	021	TRC	TRC	004	834
033	0010	-0149	33302	888	2681	14402	011	003	TRC	004	837
033	0019	-0142	33312	946	2682	14407	012	003	TRC	003	836
033	0029	-0142	33346	963	2685	14409	022	TRC	TRC	003	835
033	0048	-0139	33528	823	2699	14416	066	011	056	006	822
033	0072	-0092	33675	752	2710	14444	085	015	090	009	815
033	0096	0054	33893	754	2721	14518	091	004	096	010	815
033	0144	0176	34175		2735	14584	095	TRC	102	012	814
033	0192	0216	34320	671	2744	14612	107	TRC	125	014	811
033	0240	0242	34423	651	2750	14633	110	004	120	016	811

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0135 B	33263	970	2678	14406	0000	00000	1277
0010	-0149	33302	888	2681	14402	0013	00001	1243
0020	-0142	33314	950	2682	14407	0025	00003	1235
0030	-0142	33354	958	2685	14409	0037	00006	1203
0050	-0138	33541	813	2700	14417	0060	00015	1060
0075	-0075 B	33702	751	2711	14453	0086	00031	0956
0100	0070	33923		2722	14526	0109	00051	0858
0125	0146 C	34084		2730	14567	0129	00075	0786
0150	0184	34198		2736	14589	0148	00102	0727
0175	0207 B	34279		2741	14605	0166	00132	0685
0200	0233 C	3436 C	683 B	2745	14621	0183	00164	0649
0225	0243 B	3441 B	664	2748	14630	0199	00199	0621

C-REF-NO 003	YR 1963	DEPTH 183	WAVES 1 49XX	AIR T 01.7	VIS 96
CONS. NO 048	MONTH 6	MXSAMPC 02	WAVES 2 33X2	WET B 00.0	STN
LAT 68-050N	DAY 11	NO.DPTH 9	WND-DIR 310	WW-CODE 70	
LON 56-450W	HR 05.2	W-COLOR	WND-SPD 04	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1013.8	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
052	0000	-0095 B	33228	984	2674	14424					839
052	0010	-0145	33208	955	2674	14402					840
052	0020	-0146	33214	953	2674	14403					840
052	0030	-0147	33340	924	2684	14406					837
052	0050	-0094	33738	795	2715	14440					819
052	0075	-0042	33839	768	2721	14470					816
052	0100	0032	33953	756	2727	14510					817
052	0150	0177	34208	709	2738	14586					816
052	0175	0182	34216	703	2738	14593					815

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0095 B	33228	984	2674	14424	0000	00000	1316
0010	-0145	33208	955	2674	14402	0013	00001	1316
0020	-0146	33214	953	2674	14403	0026	00003	1310
0030	-0147	33340	924	2684	14406	0039	00006	1213
0050	-0094	33738	795	2715	14440	0061	00014	0923
0075	-0042	33839	768	2721	14470	0083	00029	0865
0100	0032	33953	756	2727	14510	0104	00048	0814
0125	0116 D	3410 E	732	2733	14554	0124	00071	0754
0150	0177	34208	709	2738	14586	0143	00097	0715
0175	0182	34216	703	2738	14593	0161	00127	0713

C-REF-NO 003	YR 1963	DEPTH 115	WAVES 1 34X0	AIR T -01.1	VIS 98
CONS. NO 049	MONTH 6	MXSAMPD 01	WAVES 2 33X0	WET B -01.7	STN
LAT 67-578N	DAY 11	NO.DPTH 7	WND-DIR 340	WW-CODE 02	
LON 55-530W	HR 08.2	W-COLOR	WND-SPD 01	CLD-TPE 7	
MARSD SQ 222		W-TRNSP	BARO 1014.2	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
082	0000	-0010 B	33419	879	2686	14466	016			004	835
082	0010		33401	889			012			004	838
082	0020	-0030	33439	879	2688	14461	019			003	838
082	0030	-0109	33666	826	2710	14429				006	825
082	0049	-C119	33706	816 B	2713	14428	066			007	819
082	0074	-0095	33784	766	2719	14444	089			009	816
082	0103	-0090	33788	767	2719	14451	089			009	816

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0010 B	33419	879	2686	14466	0000	00000	1202
0010	-0035 G	33401	889	2685	14456	0012	00001	1205
0020	-0030	33439	879	2688	14461	0024	00002	1177
0030	-0109	33666	826	2710	14429	0035	00005	0974
0050	-0118	33710	814 B	2713	14428	0054	00013	0936
0075	-0105 D	3377 D	781 B	2718	14439	0077	00028	0895
0100	-0092	33787	768	2719	14450	0100	00048	0883

C-REF-NO 003 YR 1963 DEPTH 60 WAVES 1 34X0 AIR T -01.7 VIS 94
 CONS. NO 050 MONTH 6 MXSAMPD 01 WAVES 2 33X0 WET B -01.7 STN
 LAT 67-538N DAY 11 NO.DPTH 5 WND-DIR 340 WW-CODE 47
 LON 55-240W HR 10.5 W-COLOR WND-SPD 01 CLD-TPE X
 MARSD SQ 222 W-TRNSP BARO 1015.0 CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
105	0000	-0005 B	33569	748	2698	14471	027			003	833
105	0010		33548	767			023			003	835
105	0020	-0085	33623	684 F	2705	14438	055			005	826
105	0030	-0042	33627	734	2704	14459	057			005	825
105	0055	-0068	33632	748	2705	14452	057			005	827

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	-0005 B	33569	748	2698	14471	0000	00000	1090
0010	-0036 F	33548	767	2697	14458	0011	00001	1092
0020	-0085	33623	684 F	2705	14438	0022	00002	1015
0030	-0042	33627	734	2704	14459	0032	00005	1028
0050	-0073 C	3365 B	723 C	2707	14449	0052	00013	1000

C-REF-NO 003	YR 1963	DEPTH 43	WAVES 1 35X0	AIR T 00.0	VIS 94
CONS. NO 051	MONTH 6	MXSAMPD 00	WAVES 2 34X1	WET B -00.6	STN
LAT 67-509N	DAY 11	NO.DPTH 5	WND-DIR 350	WW-CODE 45	
LON 55-020W	HR 12.6	W-COLOR	WND-SPD 04	CLD-TPE X	
MARSD SQ 222		W-TRNSP	BARO 1015.2	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
126	0000	0060 B	33379	836	2679	14498	132	004	TRC	007	835
126	0010	0033	33473	880	2688	14488	010	003	TRC	004	838
126	0020	0032	33470	875	2688	14490	014	005	TRC	002	841
126	0030	0032	33473	880	2688	14491	TRC	004	TRC	002	841
126	0040	0030	33473	870	2688	14492	TRC	TRC	TRC	003	840

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0060 B	33379	836	2679	14498	0000	00000	1267
0010	0033	33473	880	2688	14488	0012	00001	1181
0020	0032	33470	875	2688	14490	0024	00002	1183
0030	0032	33473	880	2688	14491	0036	00006	1180

PART II

Norwestlant - 2

by

C.N.A.V. "Sackville"

FISHERIES RESEARCH BOARD OF CANADA

ICNAF
Norwestlant - :2 Survey
CANADA

Part II

Grand Banks and Labrador Sea

Ship: C.N.A.V. "Sackville"

Local cruise designation: S-72

Cruise period: May 21 - June 17, 1963

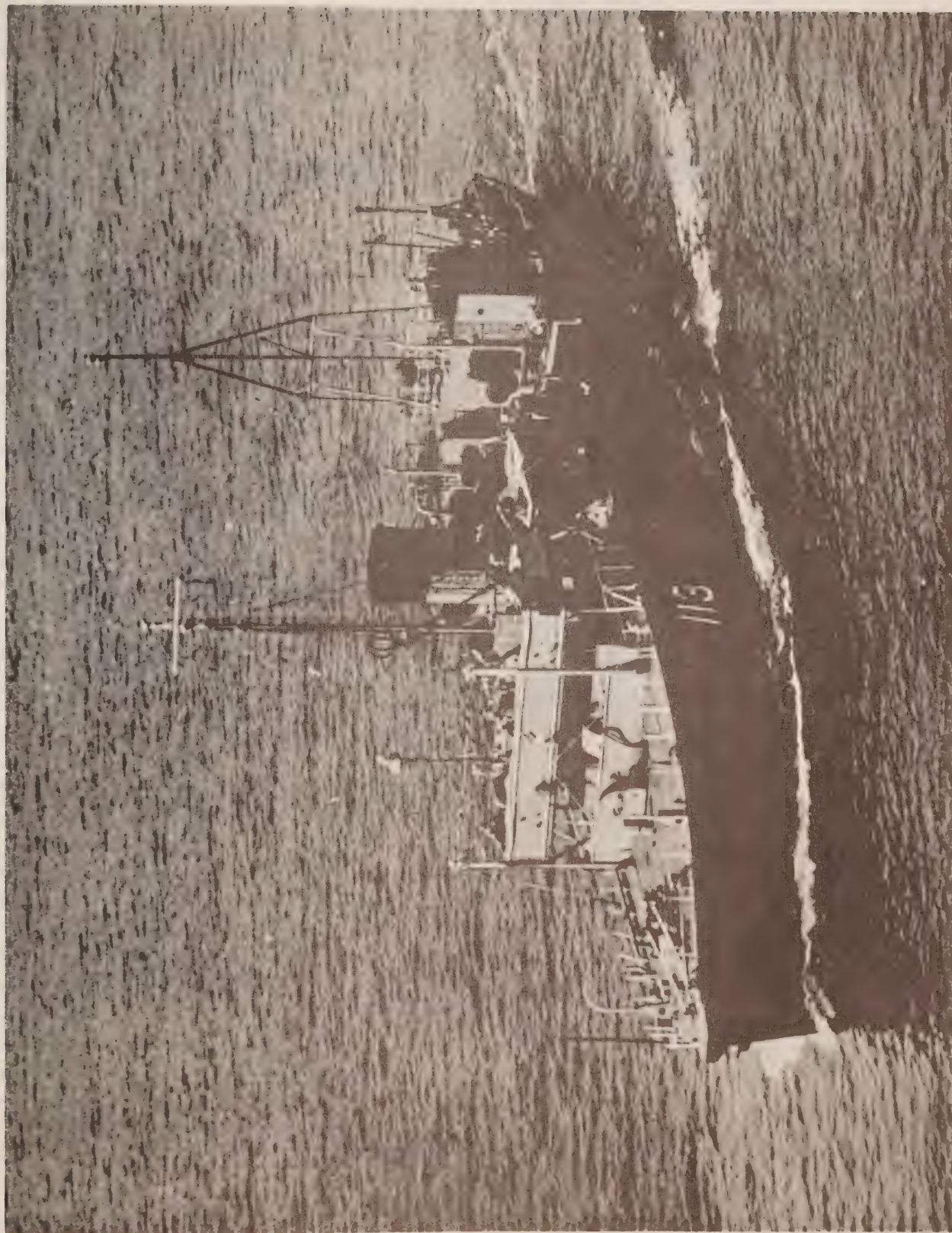
Observers: Mr. D. L. Peer
Dr. R. F. Platford
Mr. C. C. Cunningham
Mr. J. H. Hull
Mr. W. G. MacIntyre

ATLANTIC OCEANOGRAPHIC GROUP

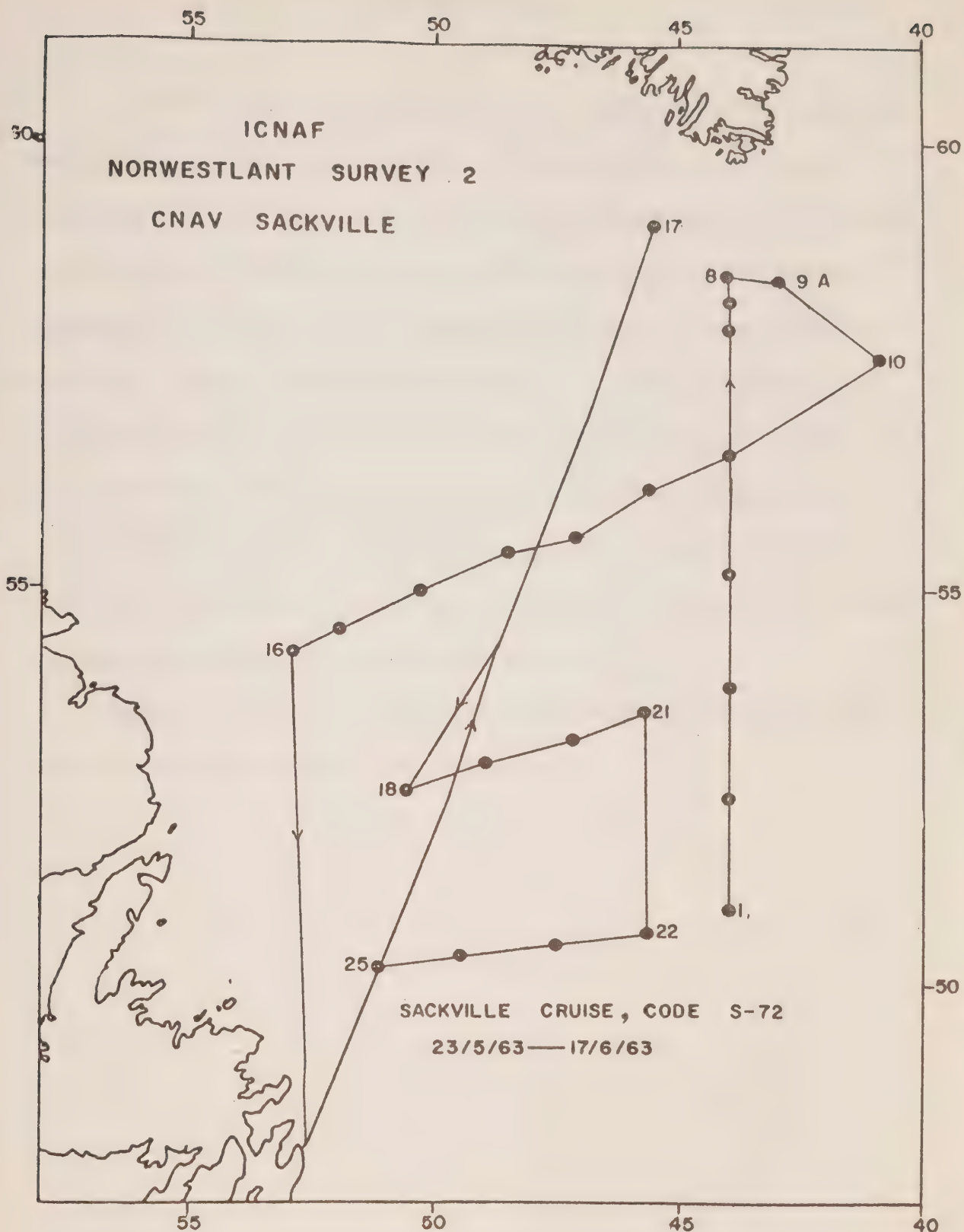
Bedford Institute of Oceanography, Dartmouth, N. S.

SECTION I

Description of data collection procedures



C.N.A.V. SACKVILLE



INTRODUCTION

A network of oceanographic stations was occupied in the area of the Grand Banks and the Labrador Sea to meet part of the requirements of the Canadian contribution in the 1963 program of the International Commission for the Northwest Atlantic Fisheries. The main objectives of the ICNAF Environmental Surveys, Norwestlant 1-3, were to study the distribution of cod eggs and larvae, redfish distribution, plankton, and physical oceanography. Canada participated in the Norwestlant 2 Survey and carried out a two-ship operation using CSS "Baffin" and CNAV "Sackville". Chemical analyses aboard ship included oxygen, phosphate, silicate, nitrate, nitrite, pH, and alkalinity. Samples for salinity, fluoride, phytoplankton, zooplankton were collected and studied at shore-based laboratories. Temperatures at standard depths were recorded at sea.

Part I of this data record gives more detailed information on the ICNAF program, the observation and laboratory procedures.

EXTRACT OF CRUISE LOG

The ship sailed from Halifax on May 21 and returned June 17, 1963, after two refueling stops at St. John's, Newfoundland. Heavy seas and gales were encountered for a major portion of the trip which was detrimental to the work. Also an entire cast of reversing bottles and thermometers was lost when the wire parted on the first station. As prearranged, some of the scientific personnel of C.N.A.V. "Sackville" were able to pay a visit to the German oceanographic ship "Anton Dohrn" off Cape Farewell to compare data. It was not possible to occupy all of the proposed oceanographic stations owing to heavy weather. 25 oceanographic stations were completed.

OBSERVATION PROCEDURES

Water samples were taken at standard depths from surface to bottom or to a maximum of 2000 metres if the depth exceeded 2000 metres. Knudsen water bottles were used along with the Negretti and Zambra, and Richter and Wiese protected reversing thermometers. The unprotected reversing thermometers were used at the following depths: 100, 500, and at each standard depth below 800 metres. All thermometers were read by two observers. Salinity, fluoride, phytoplankton, zooplankton, C-14 samples were preserved to be analyzed ashore. A large part of the chemical analyses were carried out aboard the ship.

LABORATORY PROCEDURES

Salinity values were determined on N.I.O. Conductivity Bridge No. 14 at the Bedford Institute of Oceanography. The fluoride samples were analyzed by Dr. J. Riley, Liverpool University, England. Phytoplankton samples were taken for Dr. M. Gillbricht, Germany, and for Dr. E. Grainger of the Arctic Biological Station, Fisheries Research Board of Canada. Also Zooplankton samples were taken for Dr. Grainger. Zooplankton sample collection was one of the first purposes of the cruise, to support the study of distribution of codfish and redfish eggs and larvae in the Labrador Sea.

Nitrate, nitrite, pH, and alkalinity samples were processed on the ship according to the method described by Strickland et al (1960). Oxygen was analyzed according to the Winkler method, phosphate according to the Murphy and Riley method, and silicate according to the Grasshoff method. Temperatures, depths and meteorological data were corrected and checked before being entered on the data summary sheets.

BATHYTHERMOGRAPH DATA

A total of 25 bathythermographs were taken during the cruise and later processed at the Bathythermograph Data Centre, Bedford Institute of Oceanography, Dartmouth, N.S. They have been used to corroborate the results obtained with the protected reversing thermometers.

PERSONNEL

<u>Observers at Sea:</u>	D. L. Peer	Scientist-in-Charge	AOG
	R. F. Platford		AOG
	C. C. Cunningham		AOG
	P. Christie		AOG (student)
	J. D. Smith		AOG (student)
	J. H. Hull		ABS St. Andrews
	C. Dickson		ABS St. Andrews
	W. G. MacIntyre		IODAL
	W. Atkinson		IODAL
	J. Hepgin		RCN

Data Analyses:

Oceanographic data	J. Roland Chevrier
	C. C. Cunningham
	J. H. Hull
	T. Holler
Salinity data	M. E. MacLean
	Margaret Fillmore
Chemical data	R. F. Platford
	C. C. Cunningham
	G. B. Taylor
	W. G. MacIntyre
Biological data	E. H. Grainger

SECTION II

Description of the machine-generated data record

SEE SECTION II OF PART I

GENERAL INFORMATION

<u>Institute:</u>	Atlantic Oceanographic Group
<u>Observation platform:</u>	C. N. A. V. "Sackville"
<u>Vessels cruising speed:</u>	12 knots
<u>Total number of stations occupied:</u>	25
<u>Anemometer height above sea level:</u>	12 metres
<u>Barometer readings</u>	from an aneroid barometer and were corrected prior to recording
<u>Air temperature</u>	observed from a sling psychrometer
<u>Wet bulb temperature</u>	observed from a sling psychrometer
<u>Surface sea water temperature</u>	obtained from a bucket sample using a deck thermometer

The following Standard Deviations were used to express both measurement and interpolation error estimates:

Temperature:	0.02
Salinity:	0.003
Oxygen:	0.05

N. B. Salinities were corrected according to Table Four of Cox and Folkard (1963). See p. 42

SECTION III

Serial oceanographic data

C-REF-NO 004 YR 1963 DEPTH 2234 WAVES 1 20X4 AIR T 10.8 VIS 98
 CONS. NO 001 MONTH 5 MXSAMPD 14 WAVES 2 19X9 WET B 09.0 STN
 LAT 51-OCON DAY 26 NO.DPTH 17 WND-DIR 200 WW-CODE 02
 LON 44-000W HR 13.9 W-COLOR WND-SPD 10 CLD-TPE
 MARSC SQ 185 W-TRNSP BARO 1022.2 CLD-AMT 0 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
139	0000	1070 B	35141		2696	14931	052	022	110	006	830
139	0010	1098	35229	635	2698	14944	058	018	130	007	824
139	0020	1095	35252	604	2700	14945	038	021	090	004	824
139	0031	1093	35256	618	2701	14946	048	021	080	003	824
139	0051	1098	35275	580	2701	14951	052	022	090	004	823
139	0077	1072	35340	582	2711	14947	040	034	170	004	819
139	0102	1098	35457	555	2715	14962	034	029	070	004	814
139	0154	1096	35446		2715	14969					
139	0205	1091	35425		2714	14976					
139	0308	0958	35228		2722	14942					
120	0386	0904	35149		2725	14934					
120	0481	0711	34921		2736	14873					
120	0578	0584	34867		2749	14838					
120	0773	0445	34950		2772	14814					
128	0861	0421	34966		2776	14819					
128	1065	0384	34940		2778	14837					
128	1394	0362	34920		2778	14883					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	1070 B	35141		2696	14931	0000	00000	1106
0010	1098	35229	635	2698	14944	0011	00001	1092
0020	1095	35252	604	2700	14945	0022	00002	1072
0030	1093	35256	616	2701	14946	0033	00005	1068
0050	1098	35274	582	2701	14951	0054	00014	1068
0075	1074	35333	581	2710	14947	0080	00030	0989
0100	1095	35448	556	2715	14960	0105	00052	0948
0125	1102 B	3547 E		2716	14967	0128	00080	0946
0150	1098	3545 B		2715	14969	0153	00114	0960
0175	1097	35441		2714	14973	0177	00154	0973
0200	1092	35428		2714	14975	0202	00202	0981
0225	1069 C	3539 C		2715	14971	0226	00256	0974
0250	1039 E	3535 D		2717	14963	0251	00315	0961
*0300	0970 B	3525 B		2721	14945	0298	00450	0930
0400	0878 B	3512 B		2726	14926	0390	00781	0897
0500	0682	34901		2739	14864	0475	01170	0780
0600	0561	3487 B		2752	14832	0548	01576	0653
0700	0481	3491 D		2765	14817	0608	01975	0536
0800	0436	34956		2773	14815	0658	02360	0456

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0393	34953		2778	14831	0747	03184	0427
1200	0368	3495 D		2780	14853	0832	04150	0416

C-REF-NO 004	YR 1963	DEPTH 4078	WAVES 1 23X3	AIR T 05.4	VIS 98
CONS. NO 002	MONTH 5	MXSAMPD 13	WAVES 2 22X6	WET B 05.3	STN
LAT 52-24CN	DAY 26	NO.DPTH 16	WND-DIR 220	WW-CODE 03	
LON 44-000W	HR 24.2	W-COLOR	WND-SPD 07	CLD-TPE 3	
MARSD SQ 185		W-TRNSP	BARO 1019.3	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
#242	0000	0720 B	34744		2721	14795	056	027	060	006	812
#242	0011	0630	34431	699	2709	14757	066	030	070	007	816
#242	0021	0625	34451	689	2711	14757	054	029	050	006	818
#242	0033	0593	34413	681	2712	14746	076	024	060	006	820
#242	0054	0520	34444	642	2723	14720	086	030	050	006	816
#242	0082	0583	34646	522	2732	14753	116	016	140	010	810
#242	0109	0490	34576	588	2737	14718	100	016	060	009	812
#242	0163	0594	34861		2747	14773					
#242	0218	0466	34784		2756	14729					
#242	0325	0478 B	34932		2767	14754					
233	0406	0412	34912		2773	14739					
233	0486	0379	34883		2774	14738					
233	0654	0394	34940		2777	14773					
233	0835	0366	34910		2777	14791					
233	1028	0355	34909		2778	14819					
233	1330	0353	34913		2779	14868					

#MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0720 B	34744		2721	14795	0000	00000	0868
0010	0652 E	3451 I	700	2712	14767	0009	00000	0956
0020	0624	3444 B	692	2710	14757	0019	00002	0972
0030	0603	34424	683	2712	14749	0029	00004	0961
0050	0531 B	34429	652	2721	14723	0047	00012	0875
0075	0566 E	3460 E	547 B	2730	14744	0068	00025	0792
0100	0524 E	3461 E	573 C	2736	14731	0087	00043	0741
0125	0513 I	3465 I		2740	14731	0106	00064	0699
0150	0562 I	3478 I		2745	14757	0123	00088	0660
0175	0572 E	3486 E		2749	14766	0139	00115	0622
0200	0516 F	3482 F		2754	14747	0154	00144	0581
0225	0463 C	3479 B		2757	14729	0168	00175	0549
0250	0457 H	3482 G		2760	14731	0182	00208	0525
*0300	0465 G	3489 F		2765	14744	0207	00280	0486
0400	0417	34916		2772	14741	0253	00444	0424
0500	0379	34886		2774	14741	0296	00639	0413
0600	0385 C	3492 C		2776	14760	0337	00873	0406
0700	0388	3494 B		2777	14778	0378	01147	0405
0800	0373	34918		2777	14788	0419	01465	0409

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0356	34908		2778	14814	0503	02239	0415
1200	0349	34904		2778	14845	0588	03206	0426

C-REF-NO 004 YR 1963 DEPTH 3577 WAVES 1 21X2 AIR T 05.0 VIS
 CONS. NO 003 MONTH 5 MXSAMPD 18 WAVES 2 24X4 WET B 03.8 STN
 LAT 53-48CN DAY 27 NO.DPTH 17 WND-DIR 210 WW-CODE 03
 LON 44-000W HR 09.4 W-COLOR WND-SPD 06 CLD-TPE 6
 MARSD SQ 185 W-TRNSP BARO 1021.3 CLD-AMT 3 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
094	0000	0695 B	34838		2732	14786	072		027	110	008	836
094	0011	0694	34823	658	2731	14788	062		029	120	009	832
094	0021	0687	34823	562	2732	14787	083		028	120	007	836
094	0032	0690	34821	531	2731	14790	070		033	130	007	839
094	0053	0692	34824	586	2731	14794	079		027	100	007	835
094	0079	0683	34826	502	2733	14795	074		033	110	007	835
094	0105	0632	34823	536	2739	14779	097		030	100	006	835
094	0159	0612	34807		2741	14779						
094	0212	0567	34777		2744	14769						
094	0318	0451	34732		2754	14739						
085	0471	0437	34912		2770	14761						
085	0589	0396	34901		2773	14763						
085	0715	0372	34892		2775	14773						
085	0941	0354	34887		2776	14803						
085	1178	0356	34901		2777	14844						
085	1421	0349	34906		2778	14882						
085	1784	0348	34933		2781	14943						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0695 B	34838		2732	14786	0000	00000	0765
0010	0692	34826	669	2731	14787	0008	00000	0770
0020	0688	34823	575	2732	14787	0015	00002	0769
0030	0689	34821	532	2731	14789	0023	00004	0774
0050	0692	34823	577	2731	14793	0039	00010	0780
0075	0686	34826	517 B	2732	14795	0059	00023	0774
0100	0642	34824	540 B	2738	14782	0077	00039	0722
0125	0619 C	34819		2741	14777	0095	00060	0701
0150	0612 B	34811		2741	14778	0113	00085	0701
0175	0600	34798		2741	14777	0131	00115	0699
0200	0579	34784		2743	14772	0148	00148	0686
0225	0551	34767		2745	14765	0165	00186	0669
0250	0522 C	3475 B		2747	14757	0182	00226	0649
*0300	0469 B	34734		2752	14743	0214	00315	0606
0400	0435 E	3482 G		2763	14747	0270	00516	0511
0500	0427	3492 B		2771	14761	0318	00738	0445
0600	0393	34900		2774	14763	0362	00987	0428
0700	0374	34893		2775	14772	0405	01274	0421
0800	0362	34888		2776	14783	0448	01602	0420

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0354	34890		2777	14813	0533	02396	0426
1200	0355	34901		2777	14848	0621	03387	0436
1500	0351	34915		2779	14896	0755	05255	0445

C-REF-NO 004	YR 1963	DEPTH 3313	WAVES 1 22X3	AIR T 06.8	VIS
CONS. NO 004	MONTH 5	MXSAMPD 14	WAVES 2 24X4	WET B 06.1	STN
LAT 55-115N	DAY 27	NO.DPTH 17	WND-DIR 220	WW-CODE 02	
LON 44-000W	HR 18.4	W-COLOR	WND-SPD 07	CLD-TPE 4	
MARSD SQ 185		W-TRNSP	BARO	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
184	0000	0475 B	34764		2754	14697	070	021	130	009	787
184	0011	0458	34758	749	2755	14691	076	021	170	009	794
184	0021	0456	34747	734	2755	14692	079	020	140	008	795
184	0032	0452	34750	733	2755	14692	091	019	130	007	800
184	0054	0448	34741	738	2755	14694	093	022	120	007	798
184	0081	0432	34748	728	2757	14692	088	024	140	008	797
184	0107	0386	34780	704	2765	14677	100	027	150	008	794
184	0161	0342	34810		2772	14668					
184	0214	0373	34855		2772	14690					
184	0321	0367	34895		2776	14706					
176	0370	0374	34915		2777	14717					
176	0464	0359	34885		2776	14726					
176	0554	0357	34893		2777	14740					
176	0738	0347	34890		2777	14767					
176	0935	0344	34893		2778	14798					
176	1138	0341	34897		2779	14831					
176	1446	0348	34926		2780	14886					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0475 B	34764		2754	14697	0000	00000	0557
0010	0462	34755	751	2755	14693	0006	00000	0550
0020	0456	34748	737	2755	14692	0011	00001	0551
0030	0453	34749	732	2755	14692	0017	00003	0547
0050	0449	34743	737	2755	14694	0028	00007	0550
0075	0437	34744	732	2756	14693	0041	00016	0540
0100	0399	34771	712	2763	14682	0054	00027	0483
0125	0363	34792		2768	14671	0066	00041	0434
0150	0345	34805		2771	14667	0077	00056	0408
0175	0348 B	34822		2772	14673	0087	00073	0400
0200	0362 B	34843		2772	14684	0097	00092	0401
0225	0374	34861		2772	14693	0107	00114	0402
0250	0374 B	34872		2773	14697	0117	00139	0396
*0300	0371 B	34890		2775	14704	0137	00194	0384
0400	0371	3491 B		2777	14721	0175	00333	0379
0500	0358	34886		2776	14732	0214	00513	0390
0600	0355	34893		2777	14747	0253	00736	0390
0700	0349	34891		2777	14761	0293	01002	0394
0800	0346	34891		2778	14776	0333	01312	0399

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0343	34894		2778	14809	0415	02073	0410
1200	0343	34903		2779	14842	0499	03026	0419

C-REF-NO 004 YR 1963 CLPTH 3304 WAVES 1 22X2 AIR T 03.9 VIS
 CONS. NO 005 MONTH 5 MXSAMP 18 WAVES 2 49XX WET B 03.0 STN
 LAT 56-360N DAY 28 NU.DPTH 17 WND-DIR 270 WW-CODE 02
 LON 44-000W HR 03.5 W-COLOR WND-SPD 09 CLD-TPE 6
 MARSD SQ 185 W-TRNSP BARO CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
035	0000	0400 B	34744		2760	14665	096	021	110	009	798
035	0010	0457	34715	747	2752	14690	088	026	130	009	796
035	0021	0389	34723	736	2760	14664	096	027	150	008	795
035	0031	0387	34717	733	2760	14664	093	020	160	008	795
035	0051	0386	34718	729	2760	14667	096	023	160	008	789
035	0077	0362	34740	731	2764	14662	100	027	170	008	787
035	0102	0343	34775	712	2769	14658	100	027	170	009	785
035	0153	0336	34792		2771	14664					
035	0204	0337	34815		2772	14673					
035	0307	0343	34848		2774	14693					
027	0477	0354	34875		2776	14726					
027	0597	0352 C	34882		2776	14745					
027	0715	0347	34888		2777	14763					
027	0953	0345	34889		2778	14802					
027	1187	0343	34894		2778	14840					
027	1429	0339	34890		2778	14879					
027	1788	0348	34927		2780	14944					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0400 B	34744		2760	14665	0000	00000	0494
0010	0457	34715	747	2752	14690	0005	00000	0575
0020	0397 B	34722	738	2759	14667	0011	00001	0509
0030	0386	34718	733	2760	14664	0016	00002	0503
0050	0386	34718	729	2760	14667	0026	00007	0505
0075	0364	34738	731	2764	14662	0038	00014	0471
0100	0344	34772	713	2768	14658	0050	00025	0428
0125	0337	34787		2770	14660	0060	00037	0412
0150	0336	34792		2771	14663	0071	00051	0409
0175	0336	34802		2771	14668	0081	00069	0404
0200	0337	34813		2772	14672	0091	00088	0398
0225	0338	34823		2773	14677	0101	00110	0394
0250	0339	34832		2774	14682	0111	00134	0391
*0300	0342	34846		2774	14692	0131	00190	0388
0400	0350	34866		2775	14712	0170	00331	0389
0500	0354	34877		2776	14730	0209	00514	0394
0600	0352 C	34882		2776	14746	0249	00740	0396
0700	0348	34887		2777	14761	0289	01007	0396
0800	0346	34889		2777	14776	0330	01319	0401

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0345	34890		2778	14809	0412	02085	0415
1200	0343	34894		2778	14842	0497	03053	0426
1500	0342	3490 B		2779	14892	0630	04898	0443

C-REF-NO 004	YR 1963	DEPTH 3076	WAVES 1 25X2	AIR T 04.0	VIS
CONS. NO 006	MONTH 5	MXSAMPD 15	WAVES 2 23X3	WET B 02.8	STN
LAT 58-000N	DAY 28	NO.DPTH 17	WND-DIR 250	WW-CODE 15	
LON 44-000W	HR 12.9	W-COLOR	WND-SPD 06	CLD-TPE 8	
MARSD SQ 185		W-TRNSP	BARO	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
129	0000	0485 B	34854		2760	14702	074		017	140	010	800
129	0011	0444	34825	742	2762	14687	101		017	140	010	811
129	0021	0440	34823	730	2762	14686	103		017	130	010	811
129	0032	0436	34820	723	2763	14687	106		017	110	009	814
129	0052	0441	34821	717	2762	14692	106		012	160	009	813
129	0079	0409	34825	683	2766	14683	104		015	150	010	816
129	0104	0410	34833	789	2766	14688	106		014	110	009	814
129	0158	0399	34854		2769	14692						
129	0210	0387	34891		2773	14696						
129	0314	0378	34896		2775	14710						
122	0399	0374	34898		2775	14722						
122	0499	0360	34897		2777	14733						
122	0601	0357	34892		2777	14748						
122	0806	0355	34899		2777	14781						
122	1008	0347	34902		2778	14812						
122	1215	0343	34892		2778	14845						
122	1524	0351	34918		2779	14900						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0485 B	34854		2760	14702	0000	00000	0500
0010	0452 B	34831	743	2762	14690	0005	00000	0483
0020	0440	34823	732	2762	14686	0010	00001	0477
0030	0437	34820	724	2763	14686	0015	00002	0477
0050	0441	34821	718	2762	14691	0024	00006	0483
0075	0414	34824	684	2765	14685	0036	00014	0456
0100	0409	34832	773	2766	14687	0048	00024	0447
0125	0407	34840		2767	14690	0059	00037	0441
0150	0401	34850		2769	14692	0070	00052	0430
0175	0395	34866		2771	14693	0080	00070	0414
0200	0389	34884		2773	14695	0091	00090	0397
0225	0385	34895		2774	14698	0100	00112	0388
0250	0382	34899		2775	14701	0110	00135	0384
*0300	0378	34898		2775	14708	0130	00190	0385
0400	0374	34898		2775	14722	0169	00331	0390
0500	0360	34897		2777	14733	0208	00512	0385
0600	0357	34892		2777	14748	0247	00735	0394
0700	0356	34894		2777	14764	0287	01004	0400
0800	0355	34899		2777	14781	0328	01318	0404

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
1000	0347	34902		2778	14811	0410	02082	0409
1200	0343	34893		2778	14842	0495	03045	0427
1500	0350	34916		2779	14896	0628	04891	0443

C-REF-NO 004	YR 1963	DEPTH 2386	WAVES 1 25X2	AIR T 01.0	VIS
CONS. NO 007	MONTH 5	MXSAMPD 16	WAVES 2 23X3	WET B 00.8	STN
LAT 58-215N	DAY 28	NO.DPTH 17	WND-DIR 250	WW-CODE 71	
LON 43-570W	HR 16.9	W-COLOR	WND-SPD 04	CLD-TPE 6	
MARSD SQ 185		W-TRNSP	BARO 1018.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
169	0000	0510 B	34986		2767	14714	067	019	110	006	807
169	0010	0521	34965	728	2764	14720	064	016	130	006	813
169	0020	0520	34966	728	2765	14721	073	020	090	006	817
169	0030	0518	34977	704	2766	14722	095	019	100	007	817
169	0049	0517	34968	731	2765	14725	092	020	080	007	819
169	0074	0518	34967	721	2765	14729	092	019	110	006	818
169	0099	0516	34976	703	2766	14733	089	018	120	008	818
169	0148	0507	34992		2768	14737					
169	0197	0506	35005		2769	14745					
169	0295	0481	34972		2770	14751					
160	0420	0466	34965		2771	14765					
160	0526	0439	34950		2773	14771					
160	0632	0424	34953		2774	14782					
160	0843	0374	34911		2776	14796					
160	1053	0356	34903		2778	14823					
160	1265	0365	34937		2779	14863					
160	1580	0344	34947		2782	14907					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0510 B	34986		2767	14714	0000	00000	0428
0010	0521	34965	728	2764	14720	0004	00000	0458
0020	0520	34966	728	2765	14721	0009	00001	0457
0030	0518	34977	704	2766	14722	0014	00002	0448
0050	0517	34968	731	2765	14725	0023	00006	0456
0075	0518	34967	728	2765	14729	0034	00013	0461
0100	0516	34976		2766	14733	0046	00024	0455
0125	0511	34985		2767	14735	0057	00037	0446
0150	0507	34993		2768	14738	0068	00053	0439
0175	0506	35001		2769	14742	0079	00071	0435
0200	0505	35004		2769	14745	0090	00092	0434
0225	0500	34998		2770	14747	0101	00116	0436
*0250	0494	3499 B		2770	14749	0112	00143	0437
0300	0480	34971		2770	14751	0135	00206	0442
0400	0468	34965		2771	14763	0179	00367	0444
0500	0446	34953		2772	14770	0224	00573	0438
0600	0428	34952		2774	14779	0268	00821	0429
0700	0408	3494 B		2775	14787	0311	01109	0423
0800	0384	34921		2776	14793	0354	01439	0421

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0358	34901		2777	14815	0439	02230	0422
1200	0362	34925		2779	14851	0525	03204	0426
1500	0347 B	34940		2781	14895	0654	04996	0421

C-REF-NO 004 YR 1963 DEPTH 1558 WAVES 1 28X2 AIR T 02.0 VIS
 CONS. NO 008 MONTH 5 MXSAMPD 15 WAVES 2 49XX WET B 00.8 STN
 LAT 58-450N DAY 28 NO.DPTH 17 WND-DIR 280 WW-CODE 02
 LON 44-025W HR 21.4 W-COLOR WND-SPD 05 CLD-TPE 8
 MARSD SQ 185 W-TRNSP BARO 1016.5 CLD-AMT 5 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
214	0000	0320 B	34481		2747	14628			014	020	002	803
214	0010	0339	34460	834	2744	14637	023		016	050	004	803
214	0020	0351	34514	805	2747	14645	041		016	060	002	803
214	0030	0401	34660	777	2754	14669	056		015	060	003	805
214	0051	0460	34828	738	2761	14700	085		025	090	004	800
214	0076	0498	34927	713	2764	14721	096		021	120	007	801
214	0101	0498	34963	692	2767	14725	106		030	150	009	799
214	0152	0504	34978		2767	14737						
214	0203	0496	34984	673	2769	14742						
214	0305	0495	34995	658	2770	14758						
206	0388	0484	34976	647	2770	14767						
206	0486	0456	34970	649	2772	14772						
206	0585	0436	34952		2773	14779						
206	0779	0402	34937		2776	14797						
206	0977	0370	34927		2778	14817						
206	1173	0355	34950		2781	14843						
206	1472	0302	34945		2786	14871						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0320 B	34481		2747	14628	0000	00000	0617
0010	0339	34460	834	2744	14637	0006	00000	0651
0020	0351	34514	805	2747	14645	0013	00001	0622
0030	0401	34660	777	2754	14669	0019	00003	0561
0050	0458	34823	739	2760	14699	0029	00007	0500
0075	0497	34925	714	2764	14720	0042	00015	0469
0100	0498	34962	693	2767	14725	0053	00025	0445
0125	0501	34976	683	2768	14731	0064	00038	0442
0150	0504	34978	676	2767	14736	0076	00054	0446
0175	0501	34981	673	2768	14739	0087	00073	0443
0200	0497	34984	673	2769	14741	0098	00094	0440
0225	0496	34988	670	2769	14745	0109	00118	0438
0250	0495	34992	666	2770	14749	0120	00145	0438
*0300	0495	34995	659	2770	14757	0142	00208	0442
0400	0481	34975	649	2770	14768	0187	00371	0452
0500	0453	34968		2772	14773	0232	00578	0436
0600	0433	34950		2773	14781	0276	00827	0436
0700	0415	34941		2774	14790	0320	01121	0432
0800	0398	34935		2776	14799	0364	01456	0426

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0368	34929		2778	14820	0449	02243	0414
1200	0344 B	3494 C		2782	14843	0531	03169	0395
1500	0297	34946		2787	14874	0645	04748	0355

C-REF-NO 004	YR 1963	DEPTH 2629	WAVES 1 28X4	AIR T 01.5	VIS
CUNS. NO 009	MONTH 5	MXSAMP 17	WAVES 2 28X5	WET B 00.8	STN
LAT 58-300N	DAY 29	NO.DPTH 17	WND-DIR 280	WW-CODE 74	
LUN 43-000W	HR 02.8	W-COLOR	WND-SPD 11	CLD-TPE 8	
MARSD SQ 185		W-TRNSP	BARO 1018.0	CLD-AMT 4	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
028	0000	0467 B	34906		2766	14695						
028	0011	0477	34867		2762	14701						
028	0022	0476	34868		2762	14702						
028	0033	0478	34877		2762	14705						
028	0055	0464	34855		2762	14702						
028	0082	0413	34827		2766	14685						
028	0110	0450	34911		2768	14706						
028	0161	0458	34963		2772	14719						
028	0222	0442	34946		2772	14722						
028	0331	0405	34910		2773	14724						
016	0426	0360	34869		2774	14720						
016	0532	0358	34878		2775	14737						
016	0640	0360	34895		2777	14756						
016	0861	0352	34893		2777	14789						
016	1089	0355	34907		2778	14829						
016	1331	0355	34923		2779	14870						
016	1710	0343	34935		2781	14928						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0467 B	34906		2766	14695	0000	00000	0441
0010	0474	34874		2763	14700	0005	00000	0474
0020	0476	34866		2762	14702	0009	00001	0484
0030	0478	34875		2762	14704	0014	00002	0480
0050	0469	34862		2762	14704	0024	00006	0482
0075	0424 B	34829		2765	14689	0036	00014	0462
0100	0433 B	3488 B		2767	14697	0047	00024	0438
0125	0457	34936		2769	14712	0058	00037	0423
0150	0460	34960		2771	14718	0069	00051	0411
0175	0456	34963		2772	14720	0079	00069	0406
0200	0450	34957		2772	14722	0089	00088	0407
0225	0441	34945		2772	14722	0099	00111	0409
0250	0434	34938		2772	14723	0110	00136	0410
*0300	0417	34921		2773	14724	0130	00194	0409
0400	0371	34878		2774	14721	0171	00342	0401
0500	0356	34872		2775	14731	0212	00529	0399
0600	0359	34889		2776	14749	0252	00757	0399
0700	0358	34896		2777	14765	0293	01027	0401
0800	0354	34895		2777	14780	0333	01342	0406

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0353	34901		2778	14813	0417	02116	0417
1200	0356	34915		2779	14848	0502	03086	0426
1500	0351	34928		2780	14896	0633	04911	0435

C-REF-NO 004 YR 1963 DEPTH 3163 WAVES 1 17X2 AIR T 04.0 VIS
 CONS. NO 010 MONTH 5 MXSAMPD 15 WAVES 2 27X5 WET B 04.0 STN
 LAT 57-505N DAY 31 NO.DPTH 17 WND-DIR 170 WW-CODE 02
 LON 40-540W HR 09.6 W-COLOR WND-SPD 05 CLD-TPE 7
 MARSD SQ 185 W-TRNSP BARO 1028.0 CLD-AMT 7 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
096	0000	0468 B	34947		2769	14696	087		022	120	009	
096	0011	0464	34776	716	2756	14694	088		022	130	009	
096	0022	0463	34783	692	2757	14696	100		022	130	007	
096	0032	0462	34785	699	2757	14697	100		022	130	008	
096	0054	0462	34785	713	2757	14701	104		029	130	008	
096	0081	0464	34782	712	2757	14706	097		020	130	008	
096	0108	0460	34781	711	2757	14708	108		024	140	008	
096	0162	0400	34794		2764	14692						
096	0216	0393	34821	683	2767	14699						
096	0324	0360	34840		2772	14703						
088	0371	0369	34860		2773	14715						
088	0465	0367	34882		2775	14730						
088	0560	0356	34888		2776	14741						
088	0752	0352	34883		2776	14771						
088	0950	0349	34887		2777	14803						
088	1149	0344	34886		2777	14834						
088	1465	0347	34909		2779	14888						

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0468 B	34947		2769	14696	0000	00000	0412
0010	0465	3482 F	718	2759	14695	0005	00000	0508
0020	0463	3478 B	700	2756	14695	0010	00001	0538
0030	0462	34785	697	2757	14697	0015	00002	0531
0050	0462	34785	711	2757	14700	0026	00007	0532
0075	0464	34783	713	2757	14705	0040	00016	0539
0100	0462	34781	711	2757	14708	0053	00028	0542
0125	0442 B	34783	708	2759	14704	0067	00043	0521
0150	0414 B	34790	703	2763	14696	0079	00061	0489
0175	0396	34800	697	2765	14693	0091	00081	0465
0200	0393	34813	689	2767	14696	0103	00104	0454
0225	0389	34823		2768	14699	0114	00128	0446
0250	0380 B	34827		2769	14699	0125	00156	0435
*0300	0365 B	34836		2771	14701	0147	00216	0418
0400	0370	34869		2773	14720	0189	00366	0408
0500	0363	34885		2775	14734	0229	00554	0397
0600	0354	34888		2777	14747	0269	00780	0394
0700	0352	34885		2777	14762	0309	01050	0402
0800	0351	34884		2776	14779	0351	01367	0411

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0348	34886		2777	14811	0435	02149	0421
1200	0345	34892		2778	14843	0521	03128	0431

C-REF-NO 004	YR 1963	DEPTH 3386	WAVES 1 20X3	AIR T 05.0	VIS 93
CONS. NO 011	MONTH 6	MXSAMPC 15	WAVES 2 17X4	WET B 05.0	STN
LAT 56-120N	DAY 01	NO.DPTH 17	WND-DIR 200	WW-CODE 61	
LON 45-350W	HR 12.6	W-COLOR	WND-SPD 02	CLD-TPE X	
MARSD SQ 185		W-TRNSP	BARO 1013.0	CLD-AMT 9	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
126	0000	0450 B	34710		2752	14686	097	027		009	794
126	0010	0427	34670	767	2752	14677	089	022		008	800
126	0021	0424	34703	735	2755	14678	109	024		009	805
126	0031	0421	34705	742	2755	14679	114	029		008	806
126	0051	0410	34704	735	2756	14677	103	029		008	806
126	0077	0384	34716	713	2760	14671	115	040		008	807
126	0102	0366	34736	687	2763	14667	115	014		009	807
126	0153	0369	34789		2767	14678					
126	0204	0371	34825		2770	14688					
126	0306	0375	34886		2774	14707					
119	0394	0363	34882		2775	14716					
119	0492	0358	34885		2776	14730					
119	0592	0354	34888		2777	14745					
119	0787	0348	34886		2777	14775					
119	0985	0344	34895		2778	14807					
119	1224	0343 B	34888		2778	14846					
119	1485	0346	34911		2779	14891					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0450 B	34710		2752	14686	0000	00000	0571
0010	0427	34670	767	2752	14677	0006	00000	0578
0020	0424	34699	745	2754	14678	0011	00001	0554
0030	0421	34705	741	2755	14679	0017	00003	0548
0050	0411	34704	736	2756	14677	0028	00007	0540
0075	0386	34715	715	2760	14671	0041	00016	0510
0100	0367	34734	690	2763	14668	0054	00027	0479
0125	0364	34760		2765	14671	0066	00040	0459
0150	0368	34786		2767	14677	0077	00056	0445
0175	0370	34806		2768	14682	0088	00075	0434
0200	0371	34823		2770	14687	0099	00096	0425
0225	0373	34841		2771	14692	0109	00119	0415
0250	0374	34858		2772	14697	0120	00144	0406
*0300	0375	34884		2774	14706	0140	00201	0393
0400	0363	34882		2775	14717	0179	00343	0390
0500	0358	34885		2776	14732	0219	00526	0391
0600	0354	34888		2777	14747	0259	00750	0393
0700	0350	34887		2777	14762	0299	01019	0399
0800	0348	34887		2777	14777	0339	01333	0405

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0344	34894		2778	14809	0422	02099	0411
1200	0343 B	34889		2778	14842	0507	03067	0430
1500	0346	34912		2779	14894	0640	04914	0441

C-REF-NO 004 YR 1963 DEPTH 3328 WAVES 1 32X2 AIR T 05.1 VIS
 CONS. NO 012 MONTH 6 MXSAMPD 13 WAVES 2 18X5 WET B 04.9 STN
 LAT 55-460N DAY 01 NO.DPTH 17 WND-DIR 320 WW-CODE 28
 LON 47-110W HR 19.9 W-COLOR WND-SPD 06 CLD-TPE 7
 MARSD SQ 185 W-TRNSP BARO 1017.3 CLD-AMT 8 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
199	0000	0530 B	34702		2743	14719	087	022	080	007	843
199	0010	0513	34680	663	2743	14713	082	020	100	008	824
199	0020	0508	34679	712	2743	14713	082	022	100	007	820
199	0031	0505	34677	686	2743	14713	094	024	110	007	820
199	0051	0458	34686	731	2750	14697	088	022	110	007	813
199	0077	0426	34683	706	2753	14688	087	021	110	007	816
199	0102	0426	34711	688	2755	14692	088	016	110	007	817
199	0154	0368	34699		2760	14676					
199	0205	0347	34731		2765	14676					
199	0307	0374	34846		2771	14706					
190	0332	0375	34864		2773	14711					
190	0408	0370	34880		2774	14722					
190	0487	0360	34877		2775	14730					
190	0644	0353	34884		2776	14753					
190	0811	0349	34889		2777	14780					
190	0984	0350 C	34889		2777	14809					
190	1288	0347	34902		2778	14859					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT. EN	SVA
0000	0530 B	34702		2743	14719	0000	00000	0664
0010	0513	34680	663	2743	14713	0007	00000	0662
0020	0508	34679	712	2743	14713	0013	00001	0659
0030	0506	34677	689	2743	14713	0020	00003	0659
0050	0461	34685	728	2749	14698	0033	00008	0606
0075	0427	34683	709	2753	14688	0048	00018	0575
0100	0426	34709	692	2755	14692	0062	00031	0557
0125	0403 C	3471 B		2757	14686	0076	00046	0536
0150	0373	34701		2760	14678	0089	00065	0514
0175	0356	34709		2762	14675	0102	00086	0493
0200	0348	34727		2764	14676	0114	00110	0474
0225	0350 B	3475 B		2766	14681	0126	00135	0458
0250	0356 C	3478 B		2768	14688	0137	00163	0445
*0300	0371	34838		2771	14704	0159	00225	0423
0400	0371	34880		2774	14721	0200	00374	0400
0500	0359	34877		2775	14732	0241	00561	0398
0600	0354	34881		2776	14747	0281	00789	0399
0700	0351	34886		2777	14762	0321	01059	0401
0800	0349	34889		2777	14778	0362	01374	0405

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0348 B	34892		2777	14811	0445	02147	0418
1200	0347	34899		2778	14844	0531	03119	0428

C-REF-NO 004	YR 1963	DEPTH 3683	WAVES 1 31X3	AIR T 04.1	VIS 98
CONS. NO 013	MONTH 6	MXSAMPD 19	WAVES 2 49X3	WET B 04.1	STN
LAT 55-245N	DAY 02	NO.DPTH 17	WND-DIR 310	WW-CODE 03	
LON 48-450W	HR 02.9	W-COLOR	WND-SPD 10	CLD-TPE 3	
MARSD SQ 185		W-TRNSP	BARO 1019.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 --P-	NO2	NO3	SIO	PH
029	0000	0485 B	34669		2745	14700	076			010	815
029	0011	0490	34670	750	2745	14704	069			010	814
029	0021	0489	34667	743	2745	14705	086			009	814
029	0033	0487	34667	748	2745	14706	088			007	817
029	0054	0474	34679	735	2747	14704	091			008	817
029	0082	0449	34678	727	2750	14698	096			008	817
029	0109	0398	34694	724	2757	14682	107			008	816
029	0163	0362	34749		2765	14676					
029	0217	0367	34788		2767	14688					
029	0326	0363	34847		2772	14705					
019	0483	0361	34877		2775	14730					
019	0608	0361	34890		2776	14751					
019	0739	0354	34886		2776	14770					
019	1007	0351	34902		2778	14813					
019	1274	0346	34906		2779	14856					
019	1540	0352 B	34927		2780	14903					
019	1929	0340	34937		2782	14964					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0485 B	34669		2745	14700	0000	00000	0639
0010	0489	34669	750	2745	14703	0006	00000	0644
0020	0489	34667	747	2745	14705	0013	00001	0647
0030	0488	34667	746	2745	14706	0019	00003	0647
0050	0477	34677	738	2747	14705	0032	00008	0630
0075	0457	34678	728	2749	14700	0048	00018	0610
0100	0415	34687	724	2754	14687	0063	00031	0562
0125	0381	34710		2760	14677	0076	00047	0513
0150	0365	34735		2763	14675	0089	00065	0480
0175	0362	34759		2766	14678	0101	00085	0461
0200	0363	34777		2767	14683	0112	00107	0452
0225	0367	34793		2768	14689	0124	00131	0445
0250	0367	34809		2769	14693	0135	00159	0435
*0300	0365	34836		2771	14701	0156	00219	0418
0400	0362	34866		2774	14717	0198	00368	0401
0500	0361	34880		2775	14733	0238	00555	0399
0600	0361	34890		2776	14750	0278	00783	0400
0700	0356	34888		2776	14764	0319	01056	0405
0800	0353	34889		2777	14779	0360	01374	0409

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0351	34901		2778	14812	0443	02146	0414
1200	0347	34905		2779	14844	0528	03109	0423
1500	0351 B	34924		2780	14896	0659	04937	0439

C-REF-NO 004	YR 1963	DEPTH 3310	WAVES 1 33X2	AIR T 02.6	VIS
CONS. NO 014	MONTH 6	MXSAMP 18	WAVES 2 31X7	WET B 01.4	STN
LAT 54-590N	DAY 02	NO.DPTH 17	WNC-DIR 330	WW-CODE 02	
LON 50-185W	HR 10.9	W-COLOR	WNC-SPD 06	CLD-TPE 7	
MARSD SQ 186		W-TRNSP	BARO 1023.5	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
109	0000	0600 B	34741		2737	14747	058	020	060	010	826
109	0011	0611	34727	732	2734	14753	058	022	070	009	823
109	0021	0608	34721	719	2734	14754	070	022	090	007	825
109	0032	0606	34726	700	2735	14755	064	022	080	007	821
109	0053	0607	34723	715	2735	14759	069	025	060	007	819
109	0080	0579	34746	614	2740	14752	081	029	100	007	817
109	0106	0516	34720	677	2746	14730	094	017	090	008	814
109	0159	0416	34701		2755	14697					
109	0212	0425	34794		2762	14711					
109	0318	0410	34902		2772	14724					
100	0456	0371	34895		2775	14730					
100	0573	0362	34950		2781	14746					
100	0692	0353	34890		2777	14762					
100	0938	0345	34893		2778	14799					
100	1185	0341	34892		2778	14839					
100	1431	0338 B	34894		2779	14879					
100	1818	0343	34933		2781	14947					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0600 B	34741		2737	14747	0000	00000	0717
0010	0608	34727	734	2735	14752	0007	00000	0738
0020	0609	34721	716	2734	14754	0015	00002	0745
0030	0606	34725	703	2735	14755	0022	00003	0741
0050	0607	34723	713	2735	14758	0037	00010	0746
0075	0587	34743	631 B	2739	14754	0056	00021	0710
0100	0532	34728	671 B	2744	14736	0073	00037	0659
0125	0472 B	34704		2749	14715	0089	00055	0612
0150	0428	34699		2754	14701	0104	00076	0572
0175	0414 B	3473 B		2757	14699	0118	00100	0540
0200	0419 B	3477 B		2760	14706	0131	00125	0514
0225	0425	34813		2763	14713	0144	00153	0491
0250	0423	34844		2766	14717	0156	00182	0468
*0300	0415	34891		2771	14723	0179	00246	0429
0400	0386	3490 C		2774	14727	0220	00396	0399
0500	0366	3492 B		2778	14736	0259	00576	0375
0600	0360	3494 B		2780	14750	0297	00786	0361
0700	0353	34889		2777	14763	0335	01045	0400
0800	0348	3488 C		2777	14777	0376	01362	0410

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0344	34893		2778	14809	0459	02133	0412
1200	0341	34892		2778	14841	0544	03095	0425
1500	0339	34902		2779	14891	0676	04930	0439

C-REF-NO 004	YR 1963	DEPTH 2626	WAVES 1 22XX	AIR T 02.4	VIS 98
CONS. NO 015	MONTH 6	MXSAMPD 15	WAVES 2 33X5	WET B 01.8	STN
LAT 54-315N	DAY 02	NO.DPTH 17	WND-DIR 220	WW-CODE 02	
LON 51-550W	HR 18.2	W-COLOR	WND-SPD 04	CLD-TPE 3	
MARSD SQ 186		W-TRNSP	BARO 1024.8	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 --P-	NO2	NO3	SIO	PH
182	0000	0482 B	34750		2752	14699	076			011	810
182	0011	0467	34694	757	2749	14694	069			009	812
182	0021	0450	34694	752	2751	14689	087			008	814
182	0031	0441	34703	779	2753	14687	083			010	815
182	0052	0422	34726	744	2757	14683	083			009	814
182	0078	0384	34771	735	2764	14672	106			010	813
182	0104	0345	34807	713	2771	14660	114			009	811
182	0157	0342	34846		2774	14668					
182	0208	0343	34853		2775	14677					
182	0312	0341	34873		2777	14693					
174	0402	0340	34877		2777	14708					
174	0502	0341	34889		2778	14725					
174	0604	0340	34889		2778	14741					
174	0804	0334	34884		2778	14772					
174	1011	0334	34884		2778	14806					
174	1221	0334 B	34883		2778	14842					
174	1538	0345	34925		2780	14900					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0482 B	34750		2752	14699	0000	00000	0575
0010	0466	3470 B	756	2750	14694	0006	00000	0594
0020	0452	34693	763 B	2751	14689	0012	00001	0587
0030	0442	34702	776	2753	14687	0018	00003	0571
0050	0424	34723	749	2756	14683	0029	00007	0539
0075	0389	34766	735	2763	14673	0042	00015	0474
0100	0350	34802	714	2770	14661	0053	00025	0411
0125	0337 B	34827		2773	14660	0063	00037	0382
0150	0339	34843		2774	14666	0072	00050	0374
0175	0342	34850		2775	14671	0082	00066	0374
0200	0343	34853		2775	14675	0091	00084	0374
0225	0343	34857		2775	14680	0101	00105	0374
0250	0342	34862		2776	14684	0110	00128	0372
*0300	0341	34871		2776	14691	0129	00181	0368
0400	0340	34877		2777	14708	0166	00315	0370
0500	0341	34889		2778	14725	0203	00488	0371
0600	0340	34889		2778	14741	0241	00703	0378
0700	0337	34887		2778	14756	0280	00961	0385
0800	0334	34884		2778	14771	0319	01264	0391

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0334	34884		2778	14805	0400	02015	0407
1200	0334 B	34883		2778	14838	0484	02971	0424
1500	0343	34919		2780	14893	0614	04786	0432

C-REF-NO 004 YR 1963 DEPTH 1225 WAVES 1 15X3 AIR T 01.8 VIS
 CONS. NO 016 MONTH 6 MXSAMPD 11 WAVES 2 49XX WET B 01.6 SIN
 LAT 54-160N DAY 02 NO.DPTH 16 WND-DIR 140 WW-CODE 03
 LON 52-550W HR 23.9 W-COLOR WND-SPD 06 CLD-TPE 3
 MARSD SQ 186 W-TRNSP BARO 1020.8 CLD-AMT 6 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
239	0000	0200 B	33669		2693	14564	012		002	020	003	833
239	0010	0204	33817	931	2704	14570	013		008	020	002	831
239	0020	0230	34190	891	2732	14588	018		003	030	002	829
239	0029	0230	34218	866	2734	14590	028		009	020	002	829
239	0049	0325	34643	768	2760	14640	075		010	130	007	819
239	0074	0339	34717	752	2764	14651	088		010	160	008	813
239	0099	0341	34777	722	2769	14657	100		009	160	009	816
239	0147	0332	34785		2771	14661						
239	0197	0340	34815		2772	14673						
239	0296	0348	34853		2774	14693						
222	0362	0348	34858		2775	14704						
222	0453	0351	34886		2777	14721						
222	0543	0350	34882	685	2776	14735						009
222	0726	0350	34904	694	2778	14766						011
222	0906	0349	34902	689	2778	14796						009
222	1089	0349	34904	680	2778	14826						011

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0200 B	33669		2693	14564	0000	00000	1134
0010	0204	33817	931	2704	14570	0011	00001	1026
0020	0230	34190	891	2732	14588	0020	00002	0763
0030	0234	3424 B	861	2736	14592	0027	00004	0731
0050	0327	34651	766	2760	14641	0040	00009	0499
0075	0339	34720	751	2765	14651	0052	00016	0461
0100	0341	34778		2769	14657	0063	00026	0421
0125	0336	3479 B		2770	14659	0074	00038	0410
0150	0332	34787		2771	14662	0084	00053	0410
0175	0336	34801		2771	14667	0094	00070	0404
0200	0340	34817		2772	14674	0104	00090	0399
0225	0343	34829		2773	14679	0114	00112	0395
*0250	0346	34839		2774	14685	0124	00136	0391
0300	0348	34853		2774	14694	0144	00191	0388
0400	0349	34870		2776	14711	0183	00332	0385
0500	0351	34885		2777	14729	0222	00511	0384
0600	0350	34888	688	2777	14745	0261	00733	0389
0700	0350	34900	693	2778	14762	0300	00996	0389
0800	0350	34904	693	2778	14778	0340	01301	0394
1000	0349	34907	686	2779	14812	0421	02055	0408

C-REF-NO 004	YR 1963	DEPTH 2203	WAVES 1 06X5	AIR T 05.0	VIS 95
CONS. NO 017	MONTH 6	MXSAMPC 17	WAVES 2 56X0	WET B 04.9	STN
LAT 59-060N	DAY 08	NO.DPTH 17	WND-DIR 060	WW-CODE 80	
LON 45-420W	HR 18.4	W-COLOR	WND-SPD 12	CLD-TPE 7	
MARSD SQ 185		W-TRNSP	BARO 1008.2	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
184	0000	0490 B	34807		2756	14704	042	019		004	843
184	0010	0498	34892	744	2761	14710	047	020		004	824
184	0020	0498	34895	752	2762	14711	066	020		004	823
184	0030	0495	34892	742	2762	14712	067	020		003	826
184	0050	0496	34893	745	2762	14715	072	020		004	825
184	0075	0498	34894	741	2761	14720	060	018		004	827
184	0100	0496	34897	728	2762	14724	076	017		004	825
184	0150	0509	35000		2769	14739					
184	0200	0498	34992		2769	14742					
184	0300	0493	35004		2771	14757					
173	0398	0477	34971		2770	14766					
173	0496	0464	34961		2771	14777					
173	0606	0450	34958		2772	14789					
173	0835	0432									
173	1074	0382	34927		2777	14838					
173	1328	0379 B	34950		2779	14879					
173	1729	0377	34930		2778	14946					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0490 B	34807		2756	14704	0000	00000	0541
0010	0498	34892	744	2761	14710	0005	00000	0487
0020	0498	34895	752	2762	14711	0010	00001	0486
0030	0495	34892	742	2762	14712	0015	00002	0486
0050	0496	34893	745	2762	14715	0025	00006	0489
0075	0498	34894	741	2761	14720	0037	00014	0493
0100	0496	34897	728	2762	14724	0050	00025	0492
0125	0503	3495 C		2765	14731	0062	00039	0465
0150	0509	35000		2769	14739	0073	00055	0436
0175	0505	3500 B		2769	14741	0084	00074	0432
0200	0498	34992		2769	14742	0095	00095	0435
0225	0496	34995		2770	14746	0106	00119	0434
0250	0495	34999		2770	14749	0117	00145	0433
0300	0493	35004		2771	14757	0139	00207	0432
0400	0477	34971		2770	14766	0183	00368	0450
0500	0463	34961		2771	14777	0229	00579	0453
0600	0451	34958		2772	14788	0274	00838	0451
0700	0443	3495 B		2772	14802	0321	01146	0460
0800	0435	3494 B		2772	14815	0367	01508	0466

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0397 B	34930		2776	14832	0460	02363	0448
1200	0377 B	34938		2778	14857	0549	03376	0435
1500	0365 C	3493 B		2779	14903	0684	05254	0450

C-REF-NO 004	YR 1963	DEPTH 2176	WAVES 1 13X2	AIR T 04.8	VIS 97
CONS. NO 018	MONTH 6	MXSAMPD 15	WAVES 2 09X3	WET B 04.8	STN
LAT 52-310N	DAY 11	NO.DPTH 17	WND-DIR 130	WW-CODE 80	
LON 50-390W	HR 21.8	W-COLOR	WND-SPD 04	CLD-TPE 6	
MARSD SQ 186		W-TRNSP	BARO 984.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
218	0000	0480 B	34490		2732	14695	020	015	040	002	845
218	0010	0460	34521	842	2736	14689	013	015	040	001	836
218	0020	0416	34518	826	2741	14672	022	015	070	001	836
218	0030	0404	34519	783	2742	14669	027	010	050	001	834
218	0049	0390	34575	768	2748	14667	045	013	070	002	829
218	0074	0342	34735	718	2766	14653	101	022	170	007	820
218	0098	0329	34778	701	2770	14652	111	024	140	010	820
218	0148	0329	34820		2774	14660					
218	0197	0334	34851		2776	14671					
218	0295	0340	34884		2778	14690					
211	0390	0341	34890		2778	14706					
211	0487	0342	34891		2778	14723					
211	0585	0340	34896		2779	14738					
211	0779	0337	34898		2779	14769					
211	0974	0334	34891		2779	14800					
211	1168	0342 B	34907		2779	14836					
211	1460	0338	34932		2782	14884					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0480 B	34490		2732	14695	0000	00000	0768
0010	0460	34521	842	2736	14689	0008	00000	0724
0020	0416	34518	826	2741	14672	0015	00001	0682
0030	0404	34519	783	2742	14669	0021	00003	0670
0050	0388	34582	766	2749	14666	0034	00008	0609
0075	0341	34738	727 B	2766	14652	0048	00017	0449
0100	0329	34780		2770	14652	0058	00026	0407
0125	0326	34805		2773	14655	0068	00038	0388
0150	0329	34821		2774	14661	0078	00052	0381
0175	0332	34838		2775	14666	0088	00068	0372
0200	0334	34852		2776	14672	0097	00085	0366
0225	0336	34864		2776	14677	0106	00106	0362
*0250	0338	34873		2777	14682	0115	00128	0359
0300	0340	34885		2778	14691	0133	00179	0356
0400	0341	34890		2778	14708	0170	00309	0362
0500	0342	34892		2778	14725	0207	00481	0370
0600	0340	34897		2779	14741	0244	00693	0372
0700	0338	34898		2779	14757	0282	00947	0377
0800	0336	34897		2779	14773	0320	01244	0384

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0335	34892		2779	14805	0400	01984	0402
1200	0338 B	34904		2779	14840	0483	02921	0413

C-REF-NO 004	YR 1963	DEPTH 3503	WAVES 1 00X0	AIR T 06.0	VIS
CONS. NO 019	MONTH 6	MXSAMPD 15	WAVES 2 17X4	WET B 05.8	STN
LAT 52-510N	DAY 12	NO.DPTH 17	WND-DIR	WW-CODE 50	
LON 49-000W	HR 06.4	W-COLOR	WND-SPD	CLD-TPE 7	
MARSD SQ 185		W-TRANSP	BARO 984.0	CLD-AMT 8	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
064	0000	0760 B	34818		2721	14812	020	008	040	005	818
064	0010	0756	34803	702	2720	14811	047	023	110	005	820
064	0020	0753	34805	702	2721	14812	050	010	100	003	822
064	0030	0749	34806	689	2722	14812	050	022	100	003	825
064	0050	0733	34816	682	2725	14809	064	016	130	004	821
064	0075	0658	34805	662	2734	14784	091	039	180	008	819
064	0100	0638	34815	651	2738	14780	097	029	180	008	820
064	0150	0599	34792		2741	14772					
064	0200	0547	34754		2745	14759					
064	0300	0450	34758		2756	14736					
055	0396	0452	34898		2767	14754					
055	0496	0403	34892		2772	14750					
055	0596	0399	34917		2774	14765					
055	0792	0372	34903		2776	14786					
055	0992	0360	34896		2777	14814					
055	1193	0357 B	34939		2780	14847					
055	1498	0349	34902		2778	14895					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0760 B	34818		2721	14812	0000	00000	0867
0010	0756	34803	702	2720	14811	0009	00000	0875
0020	0753	34805	702	2721	14812	0018	00002	0871
0030	0749	34806	689	2722	14812	0026	00004	0866
0050	0733	34816	682	2725	14809	0044	00011	0840
0075	0658	34805	662	2734	14784	0064	00024	0753
0100	0638	34815	651	2738	14780	0082	00041	0723
0125	0619	34808		2740	14777	0100	00061	0709
0150	0599	34792		2741	14772	0118	00086	0699
0175	0574	34772		2743	14766	0135	00116	0686
0200	0547	34754		2745	14759	0153	00148	0670
0225	0518 B	34743		2747	14751	0169	00185	0647
0250	0492 B	34740		2750	14744	0185	00224	0622
0300	0450	34758		2756	14736	0215	00308	0567
0400	0450	34899		2767	14754	0268	00495	0473
0500	0402	34893		2772	14751	0313	00706	0434
0600	0399	34917		2774	14766	0357	00950	0421
0700	0385	3491 B		2775	14777	0399	01233	0418

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0371	34902		2776	14787	0441	01560	0420
1000	0360	34898		2777	14816	0527	02356	0427
1200	0354	3492 E		2779	14847	0613	03332	0423
1500	0349	34902		2778	14895	0747	05192	0452

C-REF-NO 004	YR 1963	DEPTH 3847	WAVES 1 14X3	AIR T 06.6	VIS 98
CONS. NO 020	MONTH 6	MXSAMPC 16	WAVES 2 16X8	WET B 06.4	STN
LAT 53-100N	DAY 12	NO.DPTH 17	WND-DIR 140	WW-CODE 14	
LON 47-210W	HR 14.1	W-COLOR	WND-SPD 07	CLD-TPE 6	
MARSD SQ 185		W-TRNSP	BARO 985.8	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
141	0000	0700 B	34729		2723	14787	040	018	080	007	851
141	0010	0692	34687	716	2720	14785	058	016	080	007	824
141	0020	0671	34701	711	2724	14778	078	021	100	007	821
141	0030	0664	34704	702	2726	14777	075	023	100	008	822
141	0050	0649	34720	696	2729	14775	082	024	090	008	820
141	0075	0600	34771	692	2739	14760	093	031	120	007	818
141	0100	0544	34736	679	2744	14741	099	033	140	006	817
141	0150	0440	34732		2755	14706					
141	0200	0395	34740		2761	14696					
141	0300	0436	34906		2769	14732					
134	0393	0404	34904		2773	14734					
134	0492	0388	34909		2775	14743					
134	0592	0378	34911		2776	14756					
134	0790	0368	34907		2777	14784					
134	0992	0358	34903		2777	14814					
134	1194	0354 B	34902		2778	14846					
134	1601	0351	34922		2780	14913					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0700 B	34729		2723	14787	0000	00000	0852
0010	0692	34687	716	2720	14785	0009	00000	0875
0020	0671	34701	711	2724	14778	0017	00002	0839
0030	0664	34704	702	2726	14777	0026	00004	0829
0050	0649	34720	696	2729	14775	0042	00011	0801
0075	0600	34771	692	2739	14760	0061	00023	0705
0100	0544	34736	679	2744	14741	0078	00038	0667
0125	0488	34728		2750	14722	0095	00057	0612
0150	0440	34732		2755	14706	0109	00078	0560
0175	0411	34732		2758	14698	0123	00100	0532
0200	0395	34740		2761	14696	0136	00126	0511
0225	0401 D	3478 D		2763	14703	0149	00153	0490
0250	0409 E	3482 E		2766	14711	0161	00183	0470
0300	0436	34906		2769	14732	0184	00248	0441
0400	0402	34904		2773	14734	0227	00403	0416
0500	0387	34909		2775	14744	0269	00594	0405
0600	0377	34911		2776	14757	0309	00825	0402
0700	0372	34909		2776	14771	0350	01098	0406
0800	0367	34907		2777	14786	0392	01418	0412

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0358	34903		2777	14815	0476	02200	0421
1200	0353	34903		2778	14846	0562	03180	0431
1500	0350	34915		2779	14896	0696	05036	0444

C-REF-NO 004	YR 1963	DEPTH 3833	WAVES 1 21X3	AIR T 06.6	VIS
CONS. NO C21	MONTH 6	MXSAMPD 16	WAVES 2 19X3	WET B 06.2	STN
LAT 53-285N	DAY 12	NO.DPTH 17	WND-DIR 220	WW-CODE 08	
LON 45-400W	HR 22.0	W-COLOR	WND-SPD 11	CLD-TPE 8	
MARSD SQ 185		W-TRNSP	BARO 986.9	CLD-AMT 5	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
220	0000	0770 B	34777		2716	14815	049	004	110	005	819
220	0010	0819	34777	701	2709	14835	034	004	120	006	821
220	0020	0814	34780	699	2710	14835	046	002	130	002	822
220	0030	0780	34783	692	2715	14824	053	004	140	004	820
220	0050	0763	34774	680	2717	14820	071	001	150	004	819
220	0075	0743	34813	656	2723	14817	071	014	160	006	818
220	0100	0658	34775	645	2732	14787	074	015	170	008	816
220	0150	0583	34758		2740	14765					
220	0200	0509	34735		2748	14743					
220	0300	0462	34860		2763	14742					
211	0389	0434	34895		2769	14745					
211	0480	0414	34918		2773	14752					
211	0581	0386	34904		2775	14757					
211	0800	0365	34897		2776	14785					
211	1022	0354	34895		2777	14817					
211	1247	0352 B	34937		2781	14854					
211	1588	0350	34924		2780	14911					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0770 B	34777		2716	14815	0000	00000	0912
0010	0819	34777	701	2709	14835	0010	00001	0983
0020	0814	34780	699	2710	14835	0019	00002	0975
0030	0780	34783	692	2715	14824	0029	00004	0927
0050	0763	34774	680	2717	14820	0048	00012	0913
0075	0743	34813	656	2723	14817	0070	00026	0860
0100	0658	34775	645	2732	14787	0091	00045	0779
0125	0613 C	34762		2737	14773	0110	00067	0734
0150	0583	34758		2740	14765	0128	00092	0704
0175	0544	34743		2744	14753	0145	00121	0671
0200	0509	34735		2748	14743	0162	00153	0640
0225	0490 B	3476 C		2752	14740	0177	00187	0603
0250	0476 C	3479 E		2756	14739	0192	00223	0568
0300	0462	34860		2763	14742	0219	00299	0504
0400	0431	34899		2769	14746	0267	00472	0452
0500	0408	34917		2773	14753	0312	00675	0423
0600	0383	34903		2775	14759	0354	00914	0414
0700	0371	34898		2776	14770	0396	01194	0413
0800	0365	34897		2776	14785	0438	01518	0416

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0355	34894		2777	14814	0523	02307	0424
1200	0352 B	34928		2780	14846	0607	03266	0412
1500	0349	3492 B		2780	14896	0736	05068	0436

C-REF-NO 004	YR 1963	DEPTH 4006	WAVES 1 21X2	AIR T 08.6	VIS 98
CONS. NO 022	MONTH 6	MXSAMPD 19	WAVES 2 27X4	WET B 07.5	STN
LAT 50-490N	DAY 13	NO.DPTH 17	WND-DIR 210	WW-CODE 02	
LON 45-490W	HR 15.9	W-COLOR	WND-SPD 07	CLD-TPE 3	
MARSD SQ 185		W-TRNSP	BARO 1002.3	CLD-AMT 2	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
159	0000	0920 B	34793		2694	14872	049	007	080	006	820
159	0010	0924	34788	666	2693	14875	042	006	080	005	822
159	0020	0919	34791	656	2694	14875	058	016	100	004	824
159	0031	0872	34771	655	2700	14859	070	009	090	004	825
159	0051	0834	34951	562	2720	14850	108	009	210	007	816
159	0077	0741	34944	456	2734	14818	143	006	250	011	809
159	0102	0630		492			144	010	330	011	811
159	0153	0533	34777		2748	14746					
159	0205	0393	34769		2763	14696					
159	0307	0388	34868		2772	14712					
150	0473	0380	34908		2776	14737					
150	0596	0370 B	34907		2776	14753					
150	0721	0367	34912		2777	14773					
150	0978	0360	34922		2779	14813					
150	1237	0351	34920		2779	14852					
150	1500	0348 B	34933		2781	14895					
150	1900	0329	34946		2784	14955					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0920 B	34793		2694	14872	0000	00000	1120
0010	0924	34788	666	2693	14875	0011	00001	1132
0020	0919	34791	656	2694	14875	0023	00002	1124
0030	0877	34772	656	2700	14860	0034	00005	1076
0050	0836	3494 B	568	2719	14850	0054	00013	0893
0075	0749	34950	461	2733	14821	0075	00026	0768
0100	0639	3490 E	488	2744	14781	0093	00042	0664
0125	0578 E	3484 E		2748	14760	0109	00061	0633
0150	0537	34784		2748	14747	0125	00084	0630
0175	0471 C	34766		2754	14724	0140	00109	0570
0200	0405	34767		2762	14701	0154	00135	0502
0225	0378 E	3479 B		2766	14693	0166	00161	0463
0250	0369 G	3481 C		2769	14694	0177	00189	0439
*0300	0383 B	34860		2771	14709	0199	00250	0418
0400	0384	3490 B		2775	14726	0240	00398	0397
0500	0378	34909		2776	14740	0280	00583	0395
0600	0370 B	34907		2776	14754	0320	00809	0397
0700	0367	34911		2777	14769	0360	01079	0400
0800	0365	34916		2778	14785	0401	01392	0403

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
1000	0359	34922		2779	14816	0483	02154	0409
1200	0352	34920		2779	14846	0567	03104	0418
1500	0348 B	34933		2781	14895	0695	04898	0428

C-REF-NO 004	YR 1963	DEPTH 2721	WAVES 1 00X0	AIR T 07.0	VIS 98
CONS. NO 023	MONTH 6	MXSAMPD 17	WAVES 2 20X8	WET B 06.8	STN
LAT 50-370N	DAY 13	NO.DPTH 17	WND-DIR	WW-CODE 02	
LON 47-360W	HR 24.0	W-COLOR	WND-SPD	CLD-TPE 3	
MARSD SQ 185		W-TRNSP	BARO 1007.8	CLD-AMT 7	HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
*240	0000	0700 B	34580		2711	14785	012	013	050	004	812
*240	0010	0690	34575	733	2712	14783	016	013	060	004	821
*240	0020	0686	34573	725	2712	14783	030	010	060	004	826
*240	0030	0678	34569	722	2713	14781	029	012	040	003	827
*240	0050	0473	34590	730	2740	14702	075	015	090	005	821
*240	0075	0378	34614	691	2752	14666	100	018	130	008	817
*240	0100	0344	34703	694	2763	14657	103	025	120	009	818
*240	0150	0356	34805		2770	14672					
*240	0200	0343	34831		2773	14675					
*240	0300	0354	34873		2775	14697					
232	0413	0359	34898		2777	14718					
232	0524	0352									
232	0633	0345	34891		2778	14748					
232	0860	0340	34892		2778	14784					
232	1084	0336	34892		2779	14820					
232	1313	0343 B	34908		2779	14861					
232	1656	0330	34939		2783	14914					

*MULTIPLE CAST CONTINUED NEXT DAY

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0700 B	34580		2711	14785	0000	00000	0963
0010	0690	34575	733	2712	14783	0010	00000	0956
0020	0686	34573	725	2712	14783	0019	00002	0954
0030	0678	34569	722	2713	14781	0029	00004	0948
0050	0473	34590	730	2740	14702	0045	00011	0691
0075	0378	34614	691	2752	14666	0061	00021	0577
0100	0344	34703	694	2763	14657	0075	00033	0480
0125	0345 C	34765		2768	14663	0086	00046	0436
0150	0356	34805		2770	14672	0097	00061	0419
0175	0350	34823		2772	14674	0107	00079	0402
0200	0343	34831		2773	14675	0117	00098	0391
0225	0344	34843		2774	14680	0127	00119	0385
0250	0346	34854		2775	14685	0137	00143	0381
0300	0354	34873		2775	14697	0156	00197	0379
0400	0359	34896		2777	14716	0194	00334	0375
0500	0354	34899		2777	14730	0232	00510	0377
0600	0347	34894		2778	14744	0270	00727	0382

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0700	0343	34891		2778	14759	0309	00988	0388
0800	0341	34891		2778	14774	0349	01293	0393
1000	0337	34891		2778	14806	0430	02043	0405
1200	0340	34899		2779	14841	0513	02991	0419
1500	0334	34921		2781	14889	0641	04765	0419

C-REF-NO 004 YR 1963 DEPTH 1677 WAVES 1 00X0 AIR T 03.5 VIS 92
 CONS. NO 024 MONTH 6 MXSAMPD 16 WAVES 2 28X3 WET B 03.5 STN
 LAT 50-250N DAY 14 NO.DPTH 17 WND-DIR WW-CODE 47
 LON 49-240W HR 08.4 W-COLOR WND-SPD CLD-TPE X
 MARSD SQ 185 W-TRNSP BARO 1014.0 CLD-AMT 9 HW

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4 -P-	NO2	NO3	SIO	PH
084	0000	0395 B	33640		2673	14648	009	004	012	002	832
084	0010	0396	33672	837	2676	14651	012	003	012	002	833
084	0020	0397	34085	623	2708	14658	022	005	040	001	828
084	0030	0343	34310	574	2732	14640	052	010	090	002	823
084	0050	0275	34588	695	2760	14618	112	013	200	008	812
084	0075	0294	34675	692	2765	14631	116	004	200	010	812
084	0100	0308	34726	678	2768	14642	116	003	210	010	813
084	0150	0339	34805		2771	14665					
084	0200	0356	34866		2775	14681					
084	0300	0343	34868		2776	14692					
075	0413	0340	34880		2777	14710					
075	0520	0339	34878		2777	14727					
075	0623	0342	34890		2778	14745					
075	0835	0339	34891		2778	14779					
075	1050	0338	34892		2778	14815					
075	1267	0339 B	34902		2779	14852					
075	1598	0340	34924		2781	14908					

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0395 B	33640		2673	14648	0000	00000	1320
0010	0396	33672	837	2676	14651	0013	00001	1298
0020	0397	34085	623	2708	14658	0025	00002	0989
0030	0343	34310	574	2732	14640	0034	00005	0769
0050	0275	34588	695	2760	14618	0046	00010	0501
0075	0294	34675	692	2765	14631	0058	00017	0453
0100	0308	34726	678	2768	14642	0070	00027	0429
0125	0324	34769		2770	14654	0080	00039	0414
0150	0339	34805		2771	14665	0090	00054	0403
0175	0349	34839		2773	14674	0100	00071	0389
0200	0356	34866		2775	14681	0110	00089	0378
0225	0355	3487 B		2775	14685	0120	00110	0373
0250	0353 B	3488 B		2776	14688	0129	00133	0371
0300	0343	34868		2776	14692	0148	00186	0372
0400	0340	34879		2777	14708	0185	00320	0369
0500	0339	34878		2777	14724	0223	00495	0377
0600	0341	34887		2778	14741	0261	00712	0381
0700	0342	34892		2778	14758	0300	00971	0385

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0800	0340	34892		2778	14774	0339	01275	0392
1000	0338	34891		2778	14807	0420	02026	0406
1200	0339	34898		2779	14840	0504	02974	0418
1500	0339	34916		2780	14891	0632	04771	0430

C-REF-NO	C04	YR	1963	DEPTH	318	WAVES 1	00X0	AIR T	03.2	VIS	97
CONS. NO	C25	MONTH	6	MXSAMPC	03	WAVES 2	32X3	WET B	02.9	STN	
LAT	50-130N	DAY	14	NO.DPTH	10	WND-DIR		WW-CODE	40		
LON	51-120W	HR	13.2	W-COLOR		WND-SPD		CLD-TPE	7		
MARSC SQ	186			W-TRNSP		BARO	1018.0	CLD-AMT	8	HW	

O B S E R V E D

GMT	DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	PO4	-P-	NO2	NO3	SIO	PH
132	0000	0370 B	33010		2626	14629	013		003	030	004	812
132	0010	0351	32988	824	2626	14622	016		004	040	003	832
132	0020	0341	33001	822	2628	14620	028		003	030	003	835
132	0030	0308	33007	831	2631	14607	027		003	030	002	836
132	0050	0145	33374	782	2673	14544	082		014	100	004	814
132	0075	0011	33747	788	2711	14493	092		007	130	005	813
132	0100	0088	33992	761	2726	14535	100		007	150	009	815
132	0150	0179	34262	681	2742	14588	106					010
132	0200	0253	34482	679	2754	14632	114					011
132	0300	0346	34811	653	2771	14693	136					012

I N T E R P O L A T E D

DEPTH	T E M P	S A L	OXYGEN	SGMT	SOUND	DELTA-D	POT.EN	SVA
0000	0370 B	33010		2626	14629	0000	00000	1772
0010	0351	32988	824	2626	14622	0018	00001	1772
0020	0341	33001	822	2628	14620	0036	00004	1754
0030	0308	33007	831	2631	14607	0053	00008	1721
0050	0145	33374	782	2673	14544	0084	00020	1321
0075	0011	33747	788	2711	14493	0112	00038	0960
0100	0088	33992	761	2726	14535	0135	00058	0817
0125	0140 B	3415 C	718	2736	14565	0154	00080	0732
0150	0179	34262	681	2742	14588	0172	00105	0675
0175	0218	34377	676	2748	14611	0188	00133	0620
0200	0253	34482	679	2754	14632	0203	00161	0571
0225	0283	34582	647 C	2759	14650	0217	00192	0523
0250	0308	34669	643 B	2764	14666	0230	00222	0483
0300	0346	34811	653	2771	14693	0253	00286	0417

REFERENCES

- Brown, N. L. and B. V. Hamon, 1961 An inductive salinometer.
Deep-Sea Research 8 (1), 65-75.
- Cox, R. A. and A. R. Folkard, 1963. Discrepancies between Auto-Lab
and N. I. O. Salinometers. Unpublished manuscript, for
ICNAF circulation, 9 pp.
- Ekman, V. W., 1908. Die Zusammendrückbarkeit des Meerwassers nebst
einigen Werten für Wasser und Quecksilber. Publ. Circ.
Cons. Explor. Mer., No. 43, 47 pp.
- Knudsen, K., 1901. Hydrographischen Tabellen. Copenhagen, 63 pp.
- Murphy, J. and J. P. Riley, 1962 A modified single solution method for
the determination of phosphate in natural waters. Anal.
Chim. Acta 27 (1), 31-36.
- Rattray, M. Jr., 1962. Interpolation errors and oceanographic sampling.
Deep Sea Research. vol. 9, pp 25 to 37.
- Strickland, J. D. H. and T. R. Parsons, 1960. A manual of seawater analysis.
Bull. Fish. Res. Bd. Canada, No. 125, 185 pp.
- Wilson, W. D., 1960 Equation for the speed of sound in seawater. Journ.
Acoust. Soc., America 32 (10); p. 1357.

GC Canada. Oceanographic Data
1 Centre
C35 Data record series
1964
no.11-14

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY
